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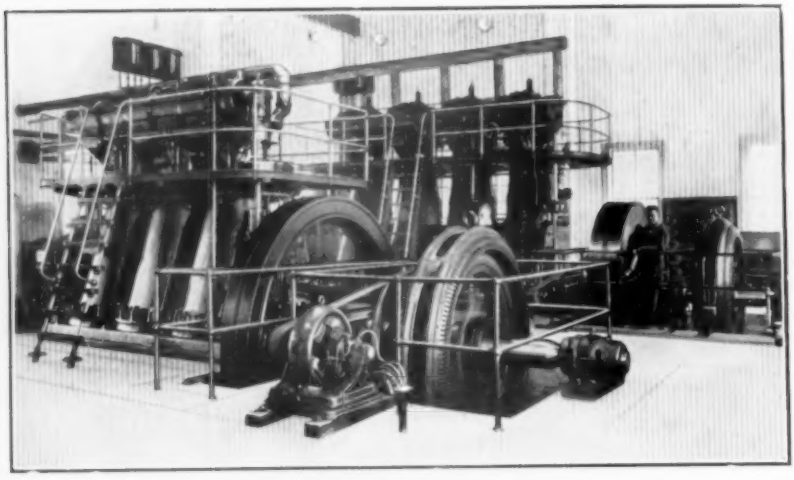

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New York October 1922

What Some Mayors Think of Prohibition

THE Mayors of the larger American cities were asked recently to give the readers of THE AMERICAN CITY the benefit of their opinions on the prohibition subject. Specifically, these Mayors were asked: "Has prohibition helped in *your* city? Has it reduced drunkenness, crime and unemployment, or in any way affected the total of drug users in the community?"

Of the replies received, only two were distinctly unfavorable to the Eighteenth Amendment. In the interest of fairness, these letters—from the Mayors of Boston and Paterson—are published in full. Space limits prevent publication of all the letters favorable to prohibition, but the eight such letters published show the trend of sentiment in widely scattered cities.

THE AMERICAN CITY would not do justice to the convictions of its editors if we failed to point out two phases of this difficult problem to which most friends and foes of prohibition have given inadequate consideration:

(1) The curtailment of personal liberty is repeatedly cited as an argument against the Eighteenth Amendment. But we have in every large city many other restrictions on personal liberty adopted in the interest of the community. Our traffic ordinances are a case in point. If experience had shown that the reckless driver endangered himself alone, his personal liberty would not have been invaded by traffic ordinances. But such regulations are upheld in principle even by automobilists who occasionally disregard them in practice, as a necessary curtailment of personal liberty in the public interest. Similarly, if experience had shown that intoxication injured the drinker only, such personal liberty might have continued unchallenged. But the social costs of drinking, to the families of drunkards and to the communities in which they live, are ample justification, we believe, for the curtailment of the former personal right to get drunk. And, just as our traffic laws apply both to the careful and to the careless driver, so must our liquor laws apply both to the careful and to the careless drinker, in the interest of the society of which each is a member.

(2) Many city officials who favor the enforcement of the Volstead Act, and many who favor a more liberal interpretation of the Eighteenth Amendment, are a unit in desiring no return of the old-fashioned saloon. Too little attention has been given, however, to the supplying of substitutes for the saloon in its desirable function of the "poor man's club." THE AMERICAN CITY commends to all who are solicitous for the welfare of their fellow citizens the providing of more adequate facilities for outdoor and indoor fellowship and recreation, where the fundamental human need for companionship and play may find an outlet under the best possible conditions. If we wish to prevent the return of the saloon, let us by all means provide a morale equivalent for this ancient institution of city life.

The letters from the Mayors follow:

Boston, Mass.

My deliberate and considered opinion of the effects of prohibition on certain specified phases of American life, based on my observation of its administration, is appended:

1. It has not reduced drunkenness; it has stimulated its more vicious forms; it has created new drunkards; and has given the practice of excessive indulgence in intoxicants a defiant and deplorable popularity.

2. It has increased crimes against persons and property; it has invented new crimes, such as the illicit traffic called "bootlegging," the manufacture and sale of deleterious and dangerous liquors and the forgery of labels, bottles, cases and other appliances to cover this spurious traffic. It has brought law and order generally into contempt and engendered a method of law enforcement among prohibition agents as criminal and lawless as that of the violators they seek to restrain.

3. The increase in the sale and use of deleterious drugs and chemical intoxicants is one of the most alarming features of prohibition's by-products, and one of incalculable evil to our democracy and civilization.

4. Prohibition has not reduced unemployment; on the contrary, it has increased it. It is self-evident that the confiscation and destruction of industries licensed and regulated by the Government and the resultant wholesale unemployment of the millions of workers turned adrift by this action has had a pronouncedly evil influence on the industrial conditions of the country. The economic conditions of Europe reacted on ours, restricting our industrial activity by closing our foreign markets, slowing down our productive agencies and making it impossible for them to absorb and employ the millions turned adrift by the Government's prohibition folly.

Prohibition has affected the psychology of America as disastrously as it has its industrial and economic forces. It has produced discontent and unrest among the workers, who declaim bitterly against the injustice and discrimination of the law, giving the wealthy privilege and opportunity the laboring classes cannot make available. Any law that sets class against class is a menace to the peace and stability of the country.

Prohibition has demonstrated to many thoughtful minds that no phase of the American citizen's life and activity is safe from the meddling and interference of those persons and organizations whose bigotry and fanaticism lead them to believe they are above and beyond the restrictions of the law and the limits of the Constitution and are divinely directed to control the religion, speech, habit and happiness of their fellow citizens and abridge their liberties, even though their intolerance and insolence involve civil dissension and public tumult. The same forces that have precipitated prohibition and restricted personal liberty are now reaching out to control public education, destroy state rights, subordinate the constitutional liberties of the states to congressional whim, bring in a species of union of church and state and revive on American soil all the evils of the European, imperialistic régimes that it has taken centuries of time and millions of human lives to eradicate.

It is time for the American Republic to rouse itself and to say whether the rule of government of the people, by the people, for the people is to continue on our soil, or whether the tyranny of intolerance and fanaticism is to be substituted for democracy. The proponents of prohibition constitute the narrowest school of thought in America and have their home and obtain their power in the least enlightened, most retrogressive and law-defying sections of the United States. If they and their peculiar doctrines triumph, then America will perish in anarchy and bloodshed.

JAMES M. CURLEY,
Mayor.

Paterson, N. J.

The effect of prohibition in the United States, as I see it, has been disastrous. Prohibition was promoted to wipe out the liquor traffic. It has done nothing of the kind. It has substituted for the regulation of the business of selling liquor, wines and beers an unlicensed trade; it has substituted for good liquor a brand of liquor that may best be designated as poison; it has substituted for the regulation of selling liquor a bootlegging combination that is country-wide; it has substituted for respect for the law disrespect for the law.

The prohibition fanatics who control Congress evidently do not understand that in order to approach their ideal—if it be their ideal—we must change human nature. I personally know of some of the men in Congress who voted for prohibition and the Volstead Act who do not practice prohibition and who are more intemperate, so far as the use of liquor is concerned, than any anti-prohibitionist. It is just such men who have made it possible to foist prohibition upon this country—the only country on earth, aside from Turkey, that prohibits the sale of liquor with alcoholic contents.

Answering your question specifically as to whether prohibition has reduced drunkenness, I can say that it has not. It has increased drunkenness and has increased the number of deaths due to drunkenness. It is impossible, of course, for public officials of a community—especially a community with a cosmopolitan population—to enforce strictly the prohibition law. It would require a great increase in the police department to enforce the law to any extent, because the sale of liquor is conducted surreptitiously. Another cause of drunkenness is the practice of distilling and brewing in the homes. Prohibition has converted many homes into distilleries and breweries.

Prohibition has not reduced crime. Crime is far more rampant to-day in all parts of the country than it ever has been. No man who reads the newspapers needs to be told that this is true.

Prohibition has greatly increased the number of drug users in this country. The latest Government statistics show that this country uses seven times as much narcotic drugs as any other country.

Prohibition has decreased the revenues of cities, states and the National Government without accomplishing the slightest benefit, and these additional burdens must fall upon the homeowner and other property owners.

The Eighteenth Amendment was passed at a

time when the country was at war. It was not passed because of any popular demand for such an amendment, but because of the activities of professional lobbyists in Washington and various state capitals. The Volstead Act, which assumes that any liquid containing more than one-half of one per cent alcohol is intoxicating, is a palpable fraud and should be wiped from the statute books of our country without delay, because the statute books of our country are no place for fraud.

FRANK J. VAN NOORT,
Mayor.

Salt Lake City, Utah

While I know full well that bootlegging is going on throughout the country and that we have guilty parties here; while I know that some citizens are making "home-brew" and are dealing in cheap intoxicants, I do, without hesitation, say that prohibition has resulted in untold good to this city and state. While there may be bootlegging going on in homes and cellars, it is very seldom indeed that I, at least, see a drunken man. This was not the case before prohibition. Hundreds could be seen on our streets at night time in a period of a week, while months and months pass now without seeing any.

Fewer crimes are being committed than heretofore; our city jail, from actual statistics, houses about one-fourth the number it used to; men out of employment are fewer than heretofore. Homes are happier, bills are more promptly paid, private and public property better preserved and maintained, and withal, conditions are greatly improved.

Propaganda against prohibition has been going on quietly in our midst for months. It has made converts of some of our respectable people, but I am sure that the great preponderance of our thinking and respectable people do not want to go back to pre-prohibition days.

C. CLARENCE NESLEN,
Mayor.

Wilmington, Del.

I think prohibition has undoubtedly helped this city. The population of our jail is about one-third less, and the Warden says that this decrease is largely due to prohibition. Of course, some think that the industrial depression has contributed to the decrease in crime. In any case, it seems to me incontrovertible that the average citizen is helped by prohibition, and very few citizens would want to return to the conditions prevailing before the law went into effect.

Of course, it will take years to get some people to obey the law and to want to obey it, but I feel sure that the vast majority believe that the United States took a long step forward when prohibition was passed.

LE ROY HARVEY,
Mayor.

Springfield, Mass.

To the question, "Has prohibition helped in your city?" I would most emphatically answer "Yes."

Drunkenness has been materially reduced. Many families who were formerly suffering for the necessities of life are now quite prosperous and happy. I see no increase in drug users; in fact, I believe they are decreasing.

I find Springfield is prosperous under prohibition, in spite of bootlegging and underground moonshine. Due, I believe, to lack of enforcement by the Federal officers, there is considerable bootlegging and moonshine and disrespect for law, which is the worst feature of the whole business. There is a general feeling here that the Federal authorities are not sincere in their work of enforcing the law.

EDWIN F. LEONARD,
Mayor.

Portland, Oregon

Portland and Oregon have had prohibition for a number of years, and the result has been very good. While I have no late figures on the social and industrial effects, we did at one time compile figures showing that prohibition greatly reduced drunkenness, crime and unemployment and had a beneficial effect on the community from a business standpoint, not to mention the moral benefit. We have compiled no recent information on the subject because there is no demand for it, the question of anti-prohibition being an entirely dead and forgotten issue locally.

As to the effect of prohibition on the drug habit, I have no statistics, but I believe the use of drugs may have increased to some extent, principally by persons who have become in bad physical condition through the drinking of moonshine.

GEO. L. BAKER,
Mayor.

Los Angeles, Calif.

In order that you might be given accurate information, the Mayor requested the statistician of the Police Department to furnish certain comparative statistics that might be of assistance in answering your query.

The Mayor is informed that the charge has been spread in certain portions of the United States that law and order conditions in Los Angeles are worse at the present time than they were in 1916 under the old saloon régime. This is absolutely untrue.

During the first six months of this year, 4,682 arrests were made for drunkenness, while for the same period in 1916 the arrests totaled 8,770. This, taken into consideration with the following facts, would indicate that conditions have greatly improved under prohibition.

Los Angeles now has almost twice as many inhabitants as it had during the year 1916. Further, the laws for the apprehension of intoxicated individuals on the streets of Los Angeles now are much more strictly enforced than they were under the saloon régime. In fact, a person showing the least signs of intoxication is almost immediately apprehended at the present time, while under saloon conditions no arrests were made unless the man was in a helpless and maudlin condition.

It is true that there has been an increase of crime in the city of Los Angeles, but not greater

proportionately than the increase in population. There has been a largely increased number of arrests due to the fact that, owing to the great congestion in the streets of Los Angeles, it has been found necessary to enforce very strictly the traffic ordinance.

There have been an increasing number of arrests made for the violation of the Volstead Act and the Gandier or Los Angeles city liquor ordinance. This is due in part to the fact that Los Angeles is within four hours' automobile travel, over splendidly paved roads, of the Mexican border. This border is very insecurely guarded, offering inducements to bootleggers and others who would bring liquor and drugs into this country.

Another difficulty that has beset those who would enforce the Volstead Act is the fact that the state of California has up until the present time failed to pass an enabling act that would put the forces of the state, county and municipalities at work enforcing the Volstead Act. In consequence, that burden has largely fallen upon Federal officials, few in number, with a very large amount of territory to cover.

Notwithstanding these conditions, Los Angeles and Southern California have prospered wonderfully under prohibition. A largely increased number of persons are building homes. Our people are better clothed. They have better living conditions generally. Business and manufacturing conditions are wonderfully improved. And the facts are that a very large majority of our people would under no conditions return to the old saloon days. So far as Los Angeles is concerned, those days are gone forever.

There is a noisy minority that is working for light wines and beers, but there has recently been a very decided stiffening of public sentiment against the sale of liquor in any form and a decided determination on the part of our best citizens to stop the illegal sale of liquor.

H. H. KINNEY,
Secretary to the Mayor.

Kansas City, Kans.

It is evident that we have a cleaner and safer city by reason of prohibition. It is true that there is a disposition on the part of many people to manufacture liquors. Our Police Department is annoyed considerably by this class of violators. However, the majority of such violations are in private homes where liquors are manufactured for the consumption of families and not for commercial sale.

Our bank deposits and the credit of the working people are much improved since the prohibition of the liquor traffic.

HARRY B. BURTON,
Mayor.

Dayton, Ohio

The results of prohibition in Dayton up to last year had been satisfactory. The records of the Police Department show that intoxication and crime had been decreasing. So far this year, however, there have been more arrests for drunkenness and other offenses than last year. This condition, no doubt, may be chargeable to the unemployment situation. There has been considerable illicit selling of liquor in the city, but through the efforts of the Police Department "Liquor Squad," and the fines imposed by our Municipal Court, bootlegging has not been very profitable here. While our Police Department has had difficulty in enforcing the prohibition law, still we feel that the city has greatly benefited by the closing of the saloons. Men who are now employed save more money, and their families have more comforts, than when there was the temptation of a saloon on almost every corner.

As to the effects of prohibition with reference to drug users, our police records show that there are practically no drug users in Dayton.

FRANK B. HALE,
Mayor.

Fort Worth, Texas

Fort Worth and vicinity had several hundred saloons, one on every prominent corner. Their influence was obviously and always toward the overthrow of hosts of men in this community and toward the impoverishment of their families. These open saloons were breeding-places for crime of every description. The closing of them lessened drunkenness in this city easily 75 per cent.

At the time of the open saloon, our jails were constantly filled with drunks. Now it is only occasionally that an intoxicated man is seen on the streets of Fort Worth. Of course, booze can be obtained by those who know how to obtain it, but before prohibition it was advertised and urged publicly and privately upon all classes of people.

You ask what influence prohibition has had upon unemployment. Drinking is less common now than in the days of the open saloon. Men who are uninfluenced by liquor are in better condition for employment than those who are under its influence. Of course it is unfair to compare the number of men unemployed to-day with the number of men unemployed in good times when prohibition was not in effect. There is unemployment now, but it is caused by adverse financial conditions, which have pushed many businesses to the wall and have made business men discharge many employees. Prohibition has in no way caused the present wave of unemployment. It is fortunate that we do not have the open saloon plus the present wave of unemployment. Financial crises always carry with them an increase in crime record. Again, from the point of view of the present crime tendencies, it is well that this financial crisis does not have to carry the burden of the open saloon.

It is claimed that drug users are more common now than they were before the days of prohibition. This is possible, but it seems probable that because the common drunkard is less in evidence the drug user has become more obvious.

Prohibition is not as effective as it ought to be. It has to combat organized and powerful foes, but prohibition has been helpful to this city, both economically and socially, and though not perfectly enforced, it is a tremendous step in the right direction.

E. R. COCKRELL,
Mayor.

Motor Flushing in Chicago

Held Invaluable in Maintaining Clean Streets

By William J. Galligan
Assistant Superintendent of Streets, Chicago, Ill.

CHICAGO was quick to appreciate the value of the horse-drawn flusher when it was first brought out, and was one of the first cities to use these flushers extensively for eliminating dust in connection with street cleaning. For this purpose it purchased, in 1909, forty St. Louis sanitary flushing machines and, later, a number of the Studebaker make.

The chief sources of dirt creating dust on city streets are abrasion of pavements through vehicular traffic, horse manure, droppings from excavation, building material, coal and refuse vehicles, building and sidewalk sweepings, wind-swept dust and particles from roof areas, and smoky atmosphere.

Chicago's street cleaning problem has materially changed during the last decade. In 1911, the city's License Bureau showed 73,226 horses and 13,944 auto vehicles, as against 31,032 horses and 198,924 auto vehicles at the present time. The state has issued licenses thus far during 1922 for over 700,000 motor cars, many of which, undoubtedly beyond the number licensed here, operate in this city. During the past ten years, the population has increased 600,000, and 500 miles of new pavements have been laid on streets never before paved. Chicago has, in all, 3,278 miles of streets, of which 2,188 miles are paved.

The horse-drawn flushers, 600 gallons capacity, have gradually given place to 5-ton power flushers of 1,500 gallons. The city has eight of these—seven Mack trucks equipped with Hvass single flushing units, one Packard truck with South Bend "Studebaker Model" double flushing units, and has contracted for ten Super trucks also equipped with the "Studebaker Model" double flushing units. These are now being delivered, and will make eighteen in all. It is expected that they will be added to from year to year until the city has fifty.

ONE OF CHICAGO'S FLEET OF MOTOR FLUSHERS

How the System Works

Chicago's streets are cared for by the patrol system of "white wings," and in the outlying districts by motor sweeper and pick-up machines. The flushers are used as an adjunct of the street cleaning forces for the purpose of securing absolutely clean pavements.

In the down-town, or "loop" district, all streets are flushed nightly. The main-artery car-line streets throughout the city are flushed tri-weekly. During the day the streets of the "loop" are sprinkled by private contract, but outside of this center the thoroughfares are free from dust even under heavy, swift-moving auto traffic, with a tri-weekly flushing service without supplementary sprinkling. No flushing is performed on Sundays. The flushers are used down-town during all seasons of year when weather conditions permit, and on other streets from May to November.

With one exception, the flushers are operated in double shifts, between the hours of 12:30 and 9:30 P. M.; and with change of drivers and helpers from 9:30 P. M. to 6:30 A. M., one hour being allowed each shift for supper, making fifteen shifts in all. These flush 267 lineal miles daily, or 133½ miles of full-width pavement in two operations—a square yardage of 2,937,000 yards. In the busiest shopping district, the sidewalks are flushed at night by use of two horse-drawn flushers, from each of which a hose is operated by two laborers.

The Mack flushers cost $9,000 each, the Packard $7,580, and the Super $7,500 each. The life of a flusher is estimated at 50,000 miles, and it will be discounted from year to year on the basis of mileage traveled. Chauffeurs receive $6.50 and helpers $5.00 per shift of 8 hours. The Mack single units average 17 lineal miles per shift, or 8½ miles full-width pavement in two operations, consuming 1 quart of oil at 12 cents and 12 gallons of gasoline at 21 cents per gallon, making a cost of $2.64 for oil and gasoline. The Packard double unit averages 23 lineal miles per shift, or 11½ miles full-width pavement in two operations, consuming 1 quart of oil at 12 cents and 16 gallons of gasoline at 21 cents, making a cost of $3.48 for oil and gas. All makes operate with 40 pounds pressure directed on the stream. For the year of 1921 the cost of operation of the Mack single unit flushers, including oil, gasoline, grease, shop labor, parts, tires, chauffeurs and helpers, averaged 82 cents per lineal mile, and that of the Packard double unit 74 cents per mile, the cost per 1,000 square yards being 7⅓ cents. The city carries its own insurance and owns its garages.

It has been ascertained through observation and accurately kept records that the double unit not only gives better results in operation because of ability to control the stream regardless of the speed of the truck, but also in point of economy is to be preferred; the double unit flushes on an average 6 more lineal miles of pavement to a shift than the single, with 4 more gallons of gasoline, using 46 tanks of water as against 37 with the single. Those of single unit run on second speed when flushing; those of double unit run on high speed.

On streets of 50-foot width or less, which comprise 99 per cent of all streets flushed, one trip is made on each half of the street. On the first, which includes the center between the innermost car tracks, three nozzles are used on the single unit type, and two on that of the double; on the return trip, two nozzles are used on all makes.

On the flushers of the single unit, the four nozzles are trained to the right of the direction traveled; good results are not obtained otherwise. On the new flushers the nozzles will be arranged, like that of the present double unit type, to flush either or both sides in one operation, and it is planned to flush the full sweep of pavement up to a width of 50 feet, if the pavement is comparatively clean.

The Power Flusher Has Eliminated Complaints

During the time of the horse-drawn flusher, numerous complaints were made by the Bureau of Sewers that the catch-basins were quickly filled by reason of their operation, entailing added work and expense. With the coming of the power flusher, those complaints ceased. This was probably due to two facts: first, that with the partial passing of the horse-drawn vehicles, the surfaces of pavements are not as dirty as formerly; second, that the horse-drawn flushers traveled slowly, going over the street more times and using much more water, which was driven to the gutter in volume, while the power flushers travel rapidly and discharge the stream with a cutting edge on the dirt, landing it in the gutter with comparatively little water.

Municipal Building Codes

By L. H. Hart
Consulting Engineer, Buffalo, N. Y.

THERE is a large and almost untouched field where economies can be effected by revising our building codes in the light of experience and allowing higher unit stresses, thinner walls, leaner mixes, and substitution of cheaper for more expensive materials at advantageous points. There is an amazing range, for instance, in the allowable safe loads for masonry in the various city building codes. In order to bring the subject forward for study, this article reviews the codes of a hundred cities, on the subject of masonry, plaster and stucco. Many codes are almost blank on important phases of these trades, and it is hoped that this summary will be helpful to progressive city building officials who wish to revise their codes and bring them up to the standard set by the best paragraphs on each subject.

Factor of Safety

Almost without exception, city codes call for actual breaking stresses in masonry at least ten times as great as the working loads. The only exceptions appear to be: Wichita, 5; Youngstown, 4, and Waterbury, 5.

Sand

Most city codes call for sand that is clean, sharp, free from loam, clay, salt and organic matter. A few refer to the fineness:

Pasadena—Not over 65 per cent through No. 50 sieve
Portland, Me.—Not over 6 per cent through No. 100 sieve
Chicago—Not over 55 per cent through No. 20 sieve
Cleveland—Not over 70 per cent through No. 30 sieve; not over 30 per cent through No. 60 sieve; not over 5 per cent through No. 200 sieve
Columbus—All through No. 10 sieve

Others make some attempt to solve the problem:

Wilkesbarre—"Free from all impurities."
Dayton—"Hard, moderately sharp."
Omaha—"Not dirty or loamy."
Seattle—"Coarse, sharp."
St. Louis—"Equal to Mississippi River sand."
Roanoke—"Clean, sharp."

Over a third of all the cities make no attempt at all to say what sand for masonry shall be like.

Cement

Most cities now refer to the cement specifications of the American Society for Testing Materials, as every cement manufacturer can comply with it, and it has been well tried out. Cement is now manufactured to as fine a standard of uniformity as rails, wire, or thread.

Lime

In the case of lime, the matter is not so simple, for the specifications of the American Society for Testing Materials are comparatively new, but they have been recently revised and now include directions for slaking and ageing. Their use is increasing rapidly, but there are still some cities whose codes are lamentably lacking in any aid to the mason, in choosing good quicklime, or slaking it properly. The "fresh burnt lime of commerce" is good enough in Birmingham, Cincinnati, Detroit, Duluth, Macon, Norfolk, Philadelphia, Pittsfield, Richmond and Wilkes-Barre. Nashville is the only city to follow the lead of the Underwriters' code, by calling for quicklime complying with the A. S. T. M. specifications.

Hydrated lime, the modern, convenient, powdered form, has received even less attention, most cities making no reference to it at all. Dayton, Kansas City, Mo., Nashville, New York, and the Underwriters are the only codes calling for A. S. T. M. standards. Birmingham says, "Standard quality"; Boston, "Pine cone or equal"; Detroit and Duluth, "First quality"; Minneapolis, Rochester, and St. Paul, "Approved brands"; Richmond, Va., "Original packages, first quality"; South Bend, "Standard brand"; Wilkes-Barre, "Pulverized."

Mortar

As to proportions for lime mortar, wide differences of opinion occur. Many cities and the Underwriters think one part of lime putty sufficient for four of sand (by volume), and five in Boston, Portland, Ore., San Francisco, Spokane, Tacoma, and Waterbury. But Birmingham, Chattanooga, Columbus, Dayton, Louisville, Macon, Manchester, Memphis, Pawtucket, Seattle, South Bend, and St. Louis reduce the sand to three parts. Omaha suggests that sand be proportioned "to suit the lime"; Cambridge and Wilkes-Barre, "properly pro-

portioned"; Boston, District of Columbia, and New Orleans say that mortar shall have "cohesion, tenacity, and adhesion."

Safe working loads for brick work depend largely upon the quality of the brick. Brick are classified under so many names that brick masons themselves might easily become confused. We find merchantable, red, salmon, selected, hard common, select, ordinary hard red, hard, standard common, kiln run, common kiln run, common, number 1 common, first common, hard common, pavers, number 1 pavers, hard pressed hydraulic paving, strictly hard pressed, pressed, hard hollow, shale, vitrified, arch, sewer, and grades A, B, C, and D, rated by compressive strength. But even with the same grade of brick, the variation in allowable load is striking. Using number 1 common brick (or equal), with lime mortar, we note that these cities allow less than 100 feet per square inch: Buffalo, 42; Dayton, 75; Denver, 70; Manchester, 83; Milwaukee, 83; Pasadena, 83; Providence, 83; Roanoke, 83; Rockford, 90; San Francisco, 97; South Bend, 80; Spokane, 97; Utica, 83; Youngstown, 97. All the rest allow 100 to 111 pounds, except Columbus, 139, and New Orleans, 150.

With cement mortar, Buffalo allows only 70, Roanoke, 139; twenty cities use 166 to 180 pounds; twenty cities 200 to 222 pounds; twenty-two cities permit 250 pounds; and two cities (Boston and Cambridge) allow 280; while New Orleans tops the list at 300. But with paving brick, eight cities permit loads of 350 pounds, and the state of Illinois allows 400 in that case.

Rubble Masonry

For stone work, ordinary rubble, there is but little more agreement: Buffalo, 42; thirteen cities, 56 to 60 pounds; twenty-two cities, 70 to 75; nine cities, 80 to 85; three at 100 to 111; and two at 120. When cement mortar is used, Buffalo is again low at 70 pounds; five cities permit 100; thirty-one allow 140; eleven agree to 153 to 173; four at 200 pounds are the maximum.

Plaster

Suitable phases of the plasterer's trade for treatment in a city building code are: specifications for sand, cement, lime, hard plaster, hair, wood lath, metal lath, fastening and spacing of lath, proportions, number and thickness of coats, time between coats, etc. Although the Society for Testing Materials has carefully prepared specifications for cement, quicklime, hydrated lime, hard plasters, and several kinds of lath, many cities have as yet made no use of the results of all this labor, by referring to any such specifications in their codes. The U. S. Bureau of Standards has organized a "plaster conference" composed of experts on each material, each phase of the work, and each large group of users, and before very long the report of this conference will be available to the public. It will cover every phase of the subject, beginning with the preparation of the backing, and extending to the decoration of plastered walls, and will be a valuable document for public officials. The various associations of manufacturers, also, are glad to advise and to furnish technical data for city officers who wish to write a correct and complete code.

The only cities which attempt anything in the building code on plaster proportions are Manchester, Minneapolis, Pawtucket, Rochester, South Bend, St. Louis, and St. Paul. They agree pretty well on 2½ parts of sand to 1 of lime putty for the first coat, and 4 or 5 parts in the second. Hair is called for, 2 to 5 pounds per barrel of lime in the first coat, and none to 3 pounds in the second, but the finish coat is largely left to imagination. Putty must age for 3 to 7 days, according to the locality. Eleven cities agree that three-coat plaster should be ⅞-inch thick. Some indicate that if hard plaster is used, or metal lath in place of wood, the thickness can be slightly reduced.

The key, or space between wood lath, seems to be uniform at ⅜-inch for lime, and ¼-inch for hard plaster, in the ten cities which make reference to it at all.

Stucco

Few cities make any reference to stucco. St. Paul calls for three coats on ⅝-inch grounds, 24 hours between the first two coats, in proportions respectively 1:2, 1:2½, 1:2½, the first coat containing hair and ten pounds of lime putty per bag of cement. Richmond, Va., has a similar specification.

The Portland Cement Association, Chicago, Ill., and the National Lime Association, Washington, D. C., now issue successful stucco specifications, which might well be incorporated, or at least referred to, in every city code.

A Warehouse and Stock Record System for Cities

By James A. Brouk
City Manager, Pawhuska, Okla.

THE city of Pawhuska, Osage County, Okla., the home of the Osage Indian Tribe, and the "oil mecca" of the mid-continent field, with a population of 8,000 inhabitants, completed the construction of a warehouse, April 1, 1922, and now employes an experienced warehouse superintendent, R. E. Dobson, to collect all the city's material, tools, and equipment under one roof and to maintain cost data for the various departments of the city's administration. Upon the completion of the warehouse, the stocks of material and equipment were assembled from the various storage rooms over the city, and an inventory was taken and brought into stock.

A set of bookkeeping, simple and comprehensive, was installed to meet the needs of the city's business, consisting of a stock ledger, an invoice register and a series of labor and material recapitulation sheets. The stock ledger is divided into two sections, showing receipts and disbursements of materials. The Receipts side of the book gives the name of the article, date received, invoice number, from whom received, unit price, freight or express, and the total amount of invoice or inventory. The Disbursements side gives the date, order number, to whom delivered, department, total cost, and the balance of material on hand. The invoice register shows the date, number, and terms of invoice, from whom received, list of articles, the amount of freight or express, material cost, total cost, date received and checked, date paid by warrant, and department for which material was bought. In fact, the stock ledger and invoice register contain any information which is desired in connection with the receipt and disbursement of materials.

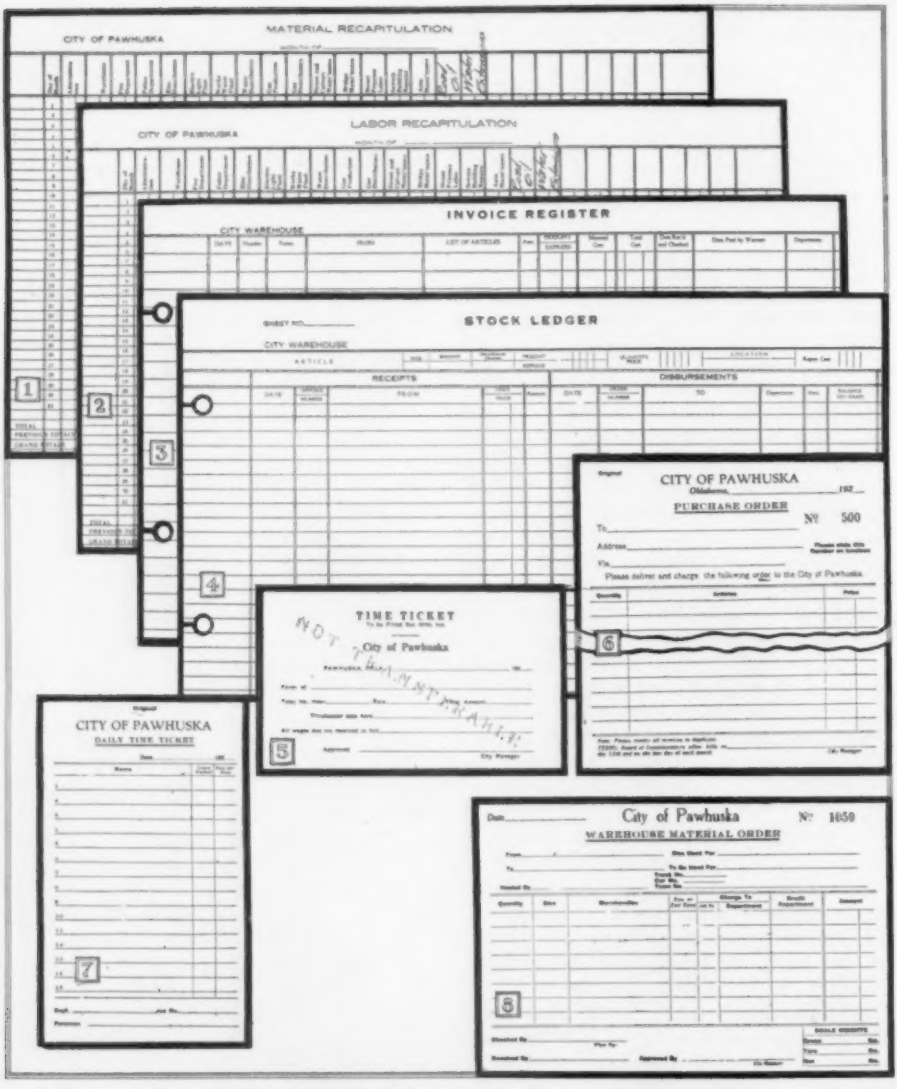
All purchases are made on orders issued in triplicate through the office of the city manager; likewise, no article is permitted to leave the warehouse except on a warehouse order issued in duplicate through the office of the city manager. In this way the city manager, as well as the warehouse superintendent, maintains a record of every article purchased and disbursed. All warehouse orders are signed by the foreman or employee of the department for which the material is used. The cost of this material is charged against the proper department, and a daily quantity balance is maintained on each article in stock. Any article loaned to another department or individual is accounted for and must be returned in the time specified.

Each foreman is supplied with a tool-box, where he keeps tools and equipment for his particular department. He is responsible for the return or proper accounting of each piece of equipment charged to him. The warehouse superintendent has a perfect record at all times of the location of each tool or piece of equipment.

The Cost Records

The warehouse superintendent is also timekeeper for the city's entire pay-roll. Public utility employees report to the warehouse at 8 a. m. for materials and tools necessary for the day's work, and report back by 5 p. m., at which time each foreman turns in a daily time ticket for his group of men. A daily cost of each department in labor, material, and incidentals, such as telephone, repairs, etc., is maintained on a monthly recapitulation sheet, so that the head of each department may know the exact expenditure of his department for the month, and is thereby able to eliminate any unnecessary expense. Such information is most essential in computing cost runs on the various departments, especially where a revenue is derived, such as the light, water, gas, or police departments. It furnishes the operating and fixed expenses for any one department, which enables the executive of the city to discover financial "leaks," to reorganize his labor, and to adjust whatever is necessary in order to show a gain instead of a loss for the different departments.

A cost sheet is also kept on repairs and



WAREHOUSE ACCOUNTING FORMS USED IN PAWHUSKA, OKLAHOMA

1.—8½ x 14-inch page for Material Recapitulation. 2.—8½ x 14-inch page for Labor Recapitulation. 3.—8½ x 14-inch loose-leaf Invoice Register. This form is used for covering materials received. All material received, either by purchase, inventory of old stocks, or by salvage, is entered in the Invoice Register. 4.—8½ x 14-inch loose-leaf Stock Ledger. This form is used to record separately each item in the warehouse; that is, each article or piece of equipment is given one or more of these forms; only one article to a sheet. Disbursements occupy three times as much space as receipts, because disbursements are scattered. 5.—Time ticket for daily jobs. 6.—Purchase orders in triplicate; original, in white, is given to person from whom merchandise is bought; duplicate, on yellow paper, goes to warehouse manager, who stamps it "Received and checked" and returns it to City Manager; triplicate, on pink paper, remains with City Manager. 7.—Daily time ticket in duplicate, on white and yellow paper. 8.—Warehouse material order in duplicate; original, on blue paper, goes to the warehouse manager; duplicate, on yellow paper, remains with the City Manager.

maintenance of city cars. The gasoline tank is located at the warehouse, so that cars may be filled in the morning before starting on the day's work. A man is on duty at all hours to disburse materials and answer calls in case of emergency. The

exact cost of construction of new jobs is also kept. A number is assigned to a job, so that material and labor may be charged to the proper job number. By this means the foreman is able to know what kind of materials to use to the best advantage, considering initial cost, maintenance, and durability. For instance, it was found that concrete culverts could be built at a little greater cost than wooden culverts, and when the life of the two is compared, the difference in cost most assuredly warrants the construction of the concrete culverts.

The Advantages

The advantages of the warehouse system, which has been in operation only a few months, are many: a complete check and record, for all future reference, is made of each item of expenditure of labor, material, or incidental expense; buying is centralized through the office of the city manager, whereby goods can be bought more intelligently; money is saved through buying in larger quantities, thereby deriving the benefits of discounts; waste is decreased by conservation and efficient handling of materials; the budget for the ensuing year's operations is readily computed; the cost of operating the city's business for any period of time is at once derived; and, above all, the public is given an opportunity to inspect every account, so that the people may know how their money is being spent in order that the public may be served.

It is the firm belief of those connected with this system, that at the close of the fiscal year the financial statement will show a marked increase on the debit side of the cash account.

School Movies to Lessen Truancy

CHICAGO is the first city in the world to adopt educational films throughout its school system. William A. Bodine, Superintendent of Compulsory Education, is quoted as believing that the movies will have a considerable influence in reducing truancy. He says that while truant officers may pick up children who are "playing hooky" and return them to school time and again, the curriculum and the teachers should be responsible for holding them there. Lesson films on geography, history, health, and nature study will prove a powerful influence in arousing a real desire to go to school. Motion picture lessons have a good deal better chance than text-books and oral explanations to penetrate the understanding of slow students. We all depend far more upon our eyes than our ears for the knowledge we get. Visualized lessons lend novelty to school work which "repeaters" have reviewed again and again. The pupils get a new slant on old lessons and are roused into enthusiasm and interest.

Radio Fire Hazard Overemphasized

WE are advised by O. H. Caldwell, Editor of *Electrical Merchandising*, that radio receiving sets are about as great a fire hazard as a white enamel bathtub. In the June, 1922, issue of that publication appears a stirring article, "Blight of the Underwriters Now Falls on the Radio Field." Mr. Caldwell believes that an article which will alarm city fire inspectors to needless activities is unfortunate. The following paragraphs are quoted from the article mentioned:

"An ordinary radio receiving set involves about as much fire hazard as a white enamel bathtub.

"Even the authors of the Underwriters' new rules freely admit that antennas installed wholly inside of buildings represent *no fire hazard whatever*.

"Such fire hazard as accompanies a radio receiving set, they point out, lies in the lightning hazard to the antenna that extends outside of the building.

"And how much lightning hazard is that? Isn't the lightning or fire hazard of an antenna extending outside a dwelling or other structure only comparable to the lightning or fire hazard of any of the following familiar structures—as much and no more:

"Electric-light wires, metal flag poles, wire clothes lines, metal roofs, metal cornices, telephone wires, metal gutters and down spouts."

The Removal of Taste and Odors by Aeration, Filtration and Other Processes---Part I

By Norman J. Howard

Bacteriologist in Charge, Filtration Laboratories, Toronto, Ont.

Of recent years in the sanitary world, the question of taste and odor occurring in public water-supplies has received universal attention. The prevention of taste is of considerable importance, and each year sees further advances made in the study not only of removal, but of prevention, of taste.

The solution of such problems seems to depend largely upon active laboratory work. Practical observation, chemical experiment, and microscopical examination should, and actually do, quite frequently indicate the cause. With this established, and its seasonal or periodic incidence recorded, prevention should be possible. The margin between taste and odor is small, and quite often complaints of taste are made when slight odors only exist. When complaints are justified, publicity as to the real cause of taste will often do much to satisfy consumers, who usually are more concerned as to the safety of the supply than as to eliminating objectionable taste. The description of taste and odor presents certain difficulties, on account of their great variety and the widely varying descriptions given. Laboratory research has frequently demonstrated that certain tastes cannot be immediately removed, but that once the cause has been established, elimination speedily follows.

KEEP THE FAITH OF THE CONSUMER

A water which has a disagreeable taste caused by iron, sulphuretted hydrogen, or algae, such as tabellaria, asterionella and synura, is generally neither unsanitary nor unhealthy, but from the esthetic, as well as from the water-works operator's, standpoint, it is highly objectionable. The average consumer thinks that as soon as the water tastes bad it is going to cause disease and immediately the sale of bottled spring water increases. The consumer frequently loses faith in the ability of the water-works department to supply a satisfactory, pure drinking water. Mr. Howard's article is a practical discussion of the means of ridding drinking water of tastes and odors.

Chief Causes of Taste in Water

At the present time, problems involving taste conditions are largely confined to excessive algae growths and the formation of chemical compounds following the sterilization of water with chlorine. The presence of iron and gases may also give rise to complaints. The discharge of various industrial wastes into the rivers and streams from which water-supplies are drawn are the causes of the most difficult problems that engineers and sanitarians are called upon to solve. It is proposed to deal with the treatment of taste and odor removal by aeration, filtration and chemical processes. Aeration is the rapid exposure of water to air with a subsequent oxidation of the organic matter, the removal of excessive carbonic acid and certain odor-producing gases. Generally speaking, if filtration is employed, aeration should follow the filtration process. If odors are present resulting from gas production, or if iron in solution is present, aeration prior to filtration is preferable.

Water containing iron in excess of two parts per million will give a taste described as inky, while water containing iron and sulphuretted hydrogen gives a particularly offensive odor, although the gas may be readily removed by aeration. The cause of sulphuretted hydrogen in water, particularly in well supplies, can usually be found

by a topographical survey. Such waters may be exceptionally pure, and if the gas formation is not produced by the reduction of sulphates, it is possible that some inorganic reducing agent is the cause. In waters containing calcium sulphate and organic matter, a calcium sulphide is formed, even at ordinary temperatures, by the action of the organic matter on the sulphate. The sulphide is decomposed by the carbonic acid, sulphuretted hydrogen being liberated, which imparts an unpleasant taste to the water. Waters containing iron and gases invariably contain carbonic acid in large quantities; thus it may be necessary to aerate the water or introduce air under pressure, and subsequently apply lime or alum. The resultant precipitate would have to be settled out before filtration. Calcium hypochlorite has been successfully used in the removal of odors and iron, and has been shown to possess remarkable powers of oxidizing organic compounds. The whole question of nuisance arising from the presence of gases and iron in solution can usually be solved by aeration and filtration processes.

Taste from Microscopic Organisms

Taste and odors resulting from the presence or decomposition of microscopic organisms are world-wide. Seasonal variation in the development of algae is more or less controlled by climatic conditions. The direct relationship of bacteria to taste, except in the case of crenothrix, is somewhat doubtful. Bacterial decomposition causing taste and odor has followed the discharge of sewage and other effluents into rivers and streams deficient in oxygen. The effluents from creameries are particularly offensive, forming fungoid growths which rapidly decompose and produce foul conditions. In slow-flowing streams the discharge of putrescible matter is objectionable and may cause highly offensive tastes and odors. As these invariably occur during warm weather and frequently are of short duration, the installation of aeration plants is hardly justified, and filtration alone will do much to remove the offense. Chlorine treatment will also materially assist, by preventing the putrefying conditions.

Ordinarily, taste does not result from crenothrix, but in the presence of iron, with which it is always associated, the organism may produce a characteristic taste. There are cases on record where decomposition of crenothrix has imparted a distinct taste. Aeration followed by filtration is effective. Filtration alone has also proved beneficial, not only in removing the organisms, but in reducing the iron content. Laboratory experiments conducted at Superior, Wis., a few years ago, where the water prior to treatments was highly colored and contained crenothrix in large numbers, demonstrated the fact that crenothrix was completely removed by the filters without aeration, but that heavy deposits on the surface of the filters caused considerable trouble by shortening the filter runs.

Taste and odors arising from excessive algae growths are frequently encountered. They are, however, somewhat easier to overcome, because the definite cause is known. Their removal requires much skill and careful supervision. Treatment of such waters usually involves a pre-chemical application of copper sulphate or other reagents followed by aeration or filtration. The writer is of the opinion that water conditions vary enormously and the amount of chemical found sufficient in one case may prove totally inadequate in another. In other words, the application should be gaged, not only upon the microscopic content, but upon the physical and chemical nature of the water. The definite establishment of free and half-bound carbonic acid, and the organic matter present, are of great importance, decomposition and the solubility of copper sulphate being dependent upon these conditions. The number of algae causing trouble are so large and well known that it is needless to dwell upon the subject. It is assumed that taste and odor will develop in all cases when specific organisms are present in sufficient numbers.

During the past few years great advances have been made in the elimination of complaints arising from excessive algae growths. The brilliant research work of Sir A. C. Houston when working on the London water-supply has suggested radical changes of great importance. He was able to demonstrate in England that "in certain cases objectionable taste in waters resulting from algae growths should be removed by the addition of minute doses of per-

manganate of potassium. The dose varies with the oxidizability of the particular water involved, but, in dealing with the London supply, the innocuous dose of about 2.5 to 5.0 pounds of permanganate per million gallons of water was found to destroy the taste in a few minutes. The faint preliminary pink tinge inparted by the addition of the permanganate rapidly faded away and, in the practise, the consumer received a tasteless water with no pink tint, but slightly browner in color than normal."

He points out that such treatment is advisable only in special circumstances. Houston's further researches demonstrated that excess chlorine or permanganate was able to remove a certain taste which frequently followed the application of chlorine for sterilization purposes. When working on the New York supply quite recently, Brush and Hale were able to show that copper sulphate was successful in killing large numbers of organisms, including tabellaria, asterionella and synura, which had caused objectionable taste and odors. Chlorine was applied and caused a reduction in the number of organisms, though not to the same extent as copper sulphate. The most interesting feature of their work was the fact that in one case where tabellaria was found, it was shown that the number present were insufficient to cause taste, yet after chlorine was applied, objectionable taste followed. In the taste resulting from synura, the application of chlorine was increased from .3 up to .73 parts per million, and a sample taken 1,500 feet down the stream from the point of chlorine application and tested 15 minutes after collection showed the synura taste to be reduced and a combination of synura and chlorine taste to be present. Samples collected about 8 hours later showed a slight chlorine taste, but the cucumber taste from the synura had disappeared.

Brush states: "Whether the excess chlorine oxidizes the synura oil, or forms a tasteless compound, is not known, but whatever may be the chemical reaction, the important factor for water-works operators is the removal of taste." Later he says: "The increase in copper sulphate apparently more promptly and completely destroys the organisms, and thus fully exposes its oils to mechanical removal in the flow through the aqueducts and to the later chemical reaction with the chlorine at Kensico. The increase in the chlorine does destroy to some extent the organisms, but its more important action appears to be a rapid neutralization of the synura oil through a chemical process."

The work of Brush and Hale has thus demonstrated on a large scale the practicability of removing taste and odor by treatment with copper sulphate and excess chlorine, and their findings may be of great value in solving future problems of a similar nature. Some interesting observations were made by Hannan in the laboratories at Toronto, to determine if algae were sensitive to differences in alkalinity, as well as to hydrogen-ion concentration. It was noted that in a water containing a luxuriant growth of algae (chlorophyceae) which was treated with normal acids, (1) enough to nearly neutralize the alkalinity, (2) equivalent to about one-third the alkalinity, marked changes occurred. In the nearly neutralized water in warm weather, growths stopped in less than three days and died off, while in the partly neutralized sample the organism thrived. Possibly the alkalinity acts as a carrier of carbon acid between the atmosphere, etc., and the algae. When the algae are flourishing, the hydrozyl-ions will generally be found to be high, and as it is lowered, a point occurs where they may die off rapidly.

It should be mentioned that Houston found that in waters containing fragellaria and asterionella the addition of acid did not cause any ill effects on the organisms. He states: "In some experiments the dissolved carbonic acid in the water was first neutralized; in others it was increased by the addition of traces of acid; but in neither case was any constant or appreciable difference in results observed from those just described." The explanation of these two conditions is somewhat problematical, and it may be that there is a definite range for the development of each type of organism. It is well known that different quantities of copper sulphate are required to treat different organisms, and it seems hypothetical that different hydrogen-ion concentrations may also plan an important part in the development and death points of these low forms of vegetable life. This is a matter which should be demonstrated on a practical scale where opportunity occurs.

Mariemont, America's Demonstration Town

AMERICA is soon to have a demonstration town, for Mariemont, Ohio, on the outskirts of Cincinnati, made possible by the public spirit and generosity of Mrs. M. M. Emery, is gradually taking form.

Properly speaking, Mariemont cannot be called a "model" town in the sense that Port Sunlight, Hempstead and Letchworth in England are model towns. Rather, Mariemont should be called a "demonstration" town. It is an attempt to solve the housing problem through the construction of a community in which working men and men with small incomes may obtain homes either by rental or purchase, at a cost that will be properly proportioned to their wages or salaries. It will supply the citizens with public services at a nominal cost. In it will be found all the conveniences and necessities which Americans demand. It will be a real city of homes, not of tenements, lodgings and boarding-houses. But the most significant thing about Mariemont, and the point wherein it differs from other attempts to create model towns, is that it is not a philanthropy, nor in any sense a charity, but essentially a business proposition.

The builders of Mariemont intend that it shall pay an adequate return on their investment, and they are conducting the enterprise on a sound basis. Their concept of the town is that it is akin to a public service, but instead of serving the public exclusively with light and water, gas, etc., the community will provide, in addition to these customary utilities, dwellings and all those things that go to make convenient, hygienic and attractive homes at little more than actual cost, leaving a reasonable but not excessive margin as reimbursement for those that have invested their capital in the project.

John Nolen, city planner, of Cambridge, Mass., and his associate, Philip W. Foster, drew the plans on which Mariemont is being developed. The plan, which is shown on page 310, provides for a town center with its village green and public buildings, town hall, library, club house, churches, hotel, community building, theater, post office, bank, stores, and public market. Ample provision is also made for schools and playgrounds, athletic fields, stadium, gymnasium, tennis courts, varied types of parks, bath-house, lagoon, field house, park shelter, and reservations on the bluffs above the river, from which the public may secure attractive views.

The property includes 365 acres, one-half of which has been divided into 750 house lots, which will result in a density of 6 or 7 families to the acre. Group houses, apartments, semi-detached and detached houses are also provided, and the standards are equal to those of the best garden city developments in England. All the houses are being carefully designed and will be constructed of brick or other permanent material. They will be provided with all modern conveniences, including electricity and steam heat from a central plant. The initial cost of the transportation development, recreation centers, sewage disposal, steam heat and electric light for dwellings will be borne by the Mariemont Company. The houses, except those that are to be built by the company for rental, will be constructed by the purchasers of lots. To aid such persons, a subsidiary building and loan association is being provided which will make available the necessary funds at comparatively low rates.

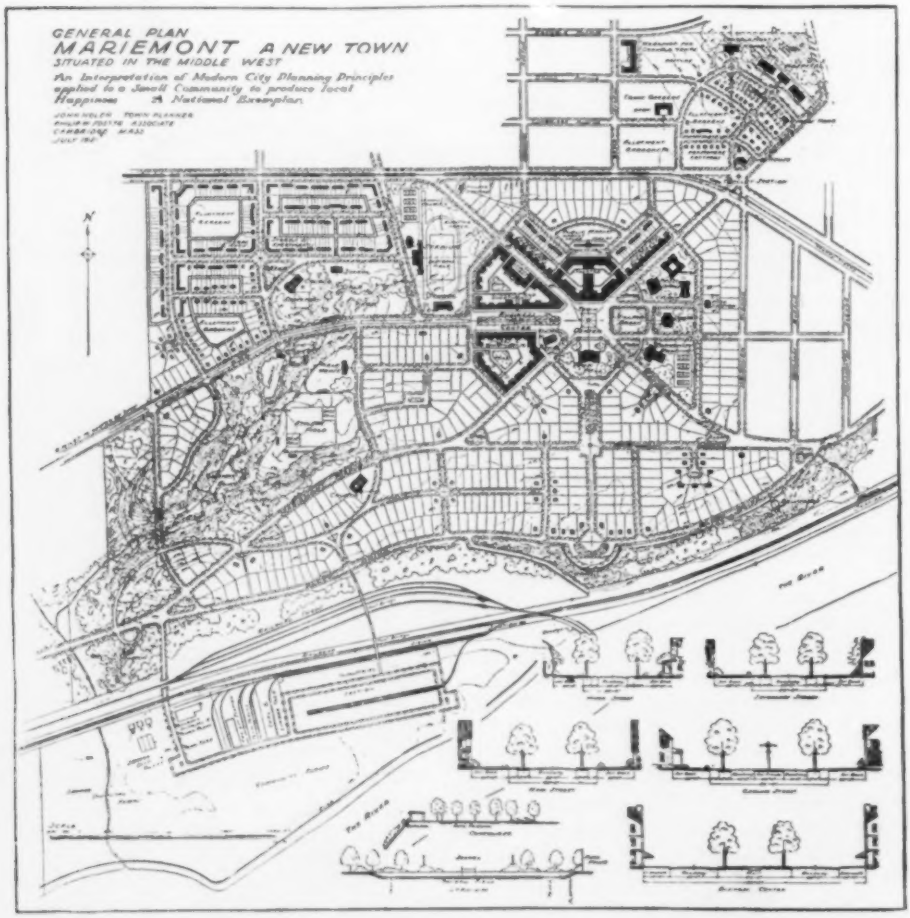
Lots Ample in Size

The lots are expected to sell from $500 up. They are ample in size, ranging from lots 20 by 100 feet for group houses, 30 by 100 feet for semi-detached, up to lots with frontages of 50 to 80 feet and a depth of 120 feet for detached dwellings. One-half the property is in lots, one-quarter in public property, and one-quarter in streets. Fifty acres are devoted to parks alone.

When completed, Mariemont will have a population of approximately 5,000, with an immediately surrounding population of approximately 10,000 using the town as a center.

The underlying purpose of Mariemont is to prove the practicability of constructing

as a business enterprise model communities which will combine the advantages of community life with the freedom of the country, and which will prove that good housing and good town planning in America are not dependent upon philanthropy, but that they will pay for themselves as legitimate business ventures. Mariemont will be watched with more than ordinary interest by city officials and town planners throughout the United States, and if it succeeds in any way comparable to the expectations of its promoters, it is likely that similar projects will be undertaken in other communities.



The Mariemont Company, following in general the lead of Letchworth and other English garden cities, is to create in the Cincinnati district a town or suburb on the same general lines, but put on a business basis in accordance with American ideas. The proposal is intended as an example or demonstration to be repeated in many places.

The Mariemont General Plan, covering a tract of about 365 acres, provides for a town with its village green and public buildings, stores and amusements, school sites, playgrounds and parks, and complete and attractive housing accommodations for wage-earners of different economic grades. The normal lot sizes for the detached houses range from 50 to 80 feet frontage, with a depth of 120 feet. The houses will be provided with all modern conveniences, including electricity and steam heat from a central plant. Adequate provision will be made for the proper maintenance of the property as a complete town or suburb.

The Design of the Street System in Relation to Vehicular Traffic

The Author's Conclusions from His Paper Before the Recent Annual Meeting of the National Conference on City Planning, at Springfield, Mass.

By Ernest P. Goodrich

1. VEHICULAR traffic is found to vary in amount at the business point in a community in proportion to its size.

2. The total radial street traffic at equal distances from large communities of varying size is proportional to the population of each community.

3. The total radial street traffic at different distances from the center of each community varies inversely as the distance from the center.

4. A definite relationship exists between the amount of through traffic and the total number of automobiles licensed in that part of the country in which the community is located.

5. Through traffic may be expected to vary in the future in proportion to the degree of saturation of automobile ownership.

6. The amount of vehicular traffic originating in, and destined to, residential districts, is to-day approximately one vehicle per day per family.

7. Vehicular traffic from and to freight stations bears a definite ratio to the population and its proportion employed in industry, depending to some extent upon the dominating types of manufacture.

8. The amount of vehicular traffic created by industry may be closely approximated on a square foot basis of land and of floor space thus employed.

9. An industrial survey is the best method of approaching the creation of a city plan, because it will provide data on the basis of which the future use of the streets can be estimated.

10. A zoning ordinance will definitely limit the amount of street traffic and provide the basis upon which it may be estimated.

11. The growth of communities shows that a general law is followed, upon the basis of which estimates of future population can be made with considerable precision.

12. Cities will grow to a definite size, depending in large measure upon the distance to larger surrounding communities.

13. The distribution of future population throughout a community can be closely estimated on the basis of the law of growth, the limit set by the zoning ordinance, topography, and social conditions which the community can establish.

14. In general, the density of population varies inversely as the distance from the center of a community.

15. The traffic during the maximum hour of the day varies from 115 to 140 per cent of the average hour.

16. The traffic during the maximum week is approximately double the average of the year.

17. Roadway widths should be designed on the basis of the number of lines of traffic which they must handle.

18. Traffic conditions at intersections limit the number of vehicles per line per hour to a maximum of about 600.

19. The main thoroughfares in single-family residence districts should be spaced not to exceed 3,000 feet apart; 2,000 feet in two-family house districts, and 1,250 feet in multi-family house districts.

20. In industrial districts the main thoroughfares should not be spaced more than 750 feet apart.

21. The total number of radiating streets which should be provided in any community can be determined on the basis of the amount of traffic which is to be expected.

22. The total width of the roadways of radiating streets can be determined on the basis of the traffic which must be carried.

23. The area allocated to zones for different uses in a community can be determined on a scientific basis.

24. The whole street transportation and street design problem can be worked out on a scientific basis.

Addition to Taunton Municipal Lighting Plant

New 6,250-K.V.A. Turbo-Generator with Boilers and Switchboard Is Installed

By Arthur L. Nelson
Jackson & Moreland, Engineers, Boston, Mass.

THE Taunton municipal lighting plant has recently been enlarged by the addition of new generating equipment. The work, which involved a new generating unit, together with boiler plant, switchboard and all accessory equipment, modification of the building and the installation of intake and discharge tunnels for condenser water, has been handled under the direction of Francis P. Callahan, Chairman of the Taunton Municipal Light Commission, who was appointed by Mayor Coughlin. The work was completed in about fifteen months' time, at a cost of $75 a kilowatt, a remarkably low figure at the prices which then prevailed, and since starting up has been giving very satisfactory service.

During the winter of 1920, the question of obtaining increased capacity at the plant was taken under consideration by the Taunton Municipal Light Commission. Engineers were retained by the Commission, and a careful study was made of the situation. The possibility of purchasing power was carefully looked into, and comparative estimates were prepared of the cost of installing additional generators in the plant and of operating such machines. It developed that the power could be generated in the Taunton municipal lighting plant at approximately the same cost at which it could be purchased, and the Municipal Council, after consideration, decided to go ahead with the enlargement of the station under the direction of the Commission.

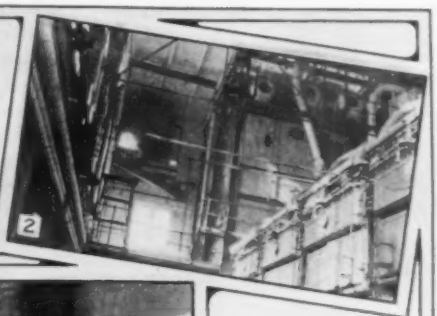
What the Problem Involved

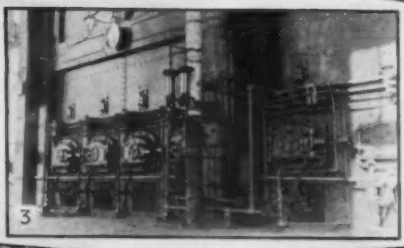
The problem of obtaining increased capacity in the plant involved a number of very interesting points. The existing plant at the time the work was undertaken consisted of two McIntosh-Seymour steam engine units rated at 400 kilowatts each, one vertical Curtis type turbo-generator, rated at 1,500 kilowatts, and one horizontal Parsons type turbo-generator rated at 1,500 kilowatts. All of these units operated on saturated steam at approximately 145 pounds pressure. The old boiler plant consisted of six 200-h.p. Heine boilers and one 500-h.p. Keeler boiler. Some of these boilers were more than twenty years old. It was, of course, very desirable that any new unit installed in the station be operated at a much higher pressure in order to get proper economy. It was also practically necessary that superheated steam be used for such a unit in order to protect the turbine blading against the erosive effects of wet steam.

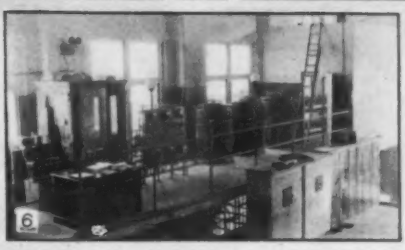
The question of installing superheaters in the existing boilers was investigated, and was considered not feasible. In addition to this, there was the fact that the existing piping was not suitable for superheat, since it contained cast iron fittings and valves with cast iron bodies and brass trim. A further point was involved in connection with the McIntosh-Seymour engines, which would probably not have operated satisfactorily on superheat.

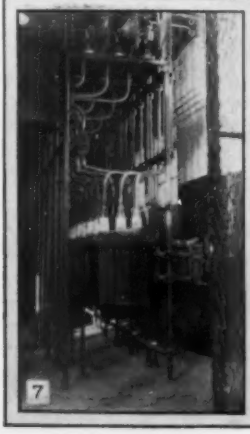
After careful consideration, it was decided to install at the West Water Street end of the station a new 6,250-K. V. A. turbo-generator with a new boiler plant to give the required amount of steam at the proper pressure and superheat and to parallel the new unit with the old plant on the station bus. Under normal conditions the new boiler plant and the old boiler plant are operated independently as two entirely separate plants, but a cross-connection is provided between the two steam headers, equipped with reducing valves, safety valves and a de-superheater, so that the new boiler plant can be used to supply saturated steam at 145 pounds pressure to the older generating units, if operating conditions should make this desirable.

In the engine room of the existing plant









VIEWS OF TAUNTON'S MUNICIPAL PLANT

1.—New generating unit in background

2.—New boiler plant

3.—Fuel oil burners and fire control system

4.—Centrifugal boiler feed pump

5.—Concrete switching platform with new board

6.—River end of switching platform

7.—Station bus, oil circuit breakers, instrument transformers, disconnecting switches, etc., mounted on pipe framework

8.—Exterior of station

there was room for the installation of an additional turbine unit, and in the boiler room space for the new boilers was provided by the removal of existing offices and a considerable amount of remodeling of the building.

The Generator

Figure 1 shows in the background of the picture the new generating unit. This is a Westinghouse turbo-generator with a Parsons type double flow turbine operating on steam at 200 pounds pressure and 100 degrees superheat. The generator delivers to the station bus 3-phase alternating current at 2,300 volts and 60 cycle. The unit is set on a composite foundation of structural steel encased in concrete. The operating platform around the machine, as will be noted, is at a higher level than the old engine room floor in order to give space for condensing equipment. Underneath the unit, and carried on concrete piers, is an Elliott surface condenser. The air pumps on this condenser are of the steam ejector type with jet inter-coolers. The circulating pump and condensate pump are mounted below the condenser near the water end and are driven on the same shaft by a combined motor and steam turbine drive. This combined drive was used for reliability and also for the proper working out of the heat balance in the plant.

The Boiler Plant

The new boiler plant is shown in Figure 2, which is a view in the boiler room looking toward the West Water Street end of the station. The plant consists of two 652-h.p. Stirling water-tube boilers, shown in the background of the picture, which are equipped with B. & W. superheaters and designed to deliver steam to the turbine at 200 pounds pressure and 100 degrees superheat. The boilers at present are operated on fuel oil, as is the old plant, and are fed from a Hammel fuel oil pumping set. They are both equipped with Leahey burners and with the Merit system of fire control, which is shown in Figure 3.

From Figure 2 it will be noted that the boilers are set on a structural steel foundation, which places the operating floor 15 feet above the existing basement floor on which the old boilers are mounted. This has been done in order to make it possible to change over the battery to suit it for coal firing at a later date, if that becomes necessary or desirable. To further facilitate the possibility of changing to coal firing, the boiler foundation and supporting columns have been designed to carry a future coal bunker, and in the ash-pit of each boiler has been placed a slab of cinder concrete, which may be broken out to permit the installation of stokers.

Water is fed to the boilers by a set of two Alberger centrifugal boiler feed pumps, driven by steam turbines and controlled by differential pressure regulators. One of these pumps is shown in Figure 4.

The level of the water in the boilers and the admission of boiler feed is controlled by a Stets feed water regulator, which is shown in Figure 2. The entire control of the boiler feed is therefore automatic.

The Switching Equipment

In connection with the new plant, an entirely new remote-control switchboard and switching structure was installed for the older generator units as well as for the new unit. This switchboard and the switching structure are shown in Figures 5, 6 and 7. Figure 5 shows the concrete switching platform with the new board. In the middle are the exciter, generator and feeder panels. To the left of this main board are the panels which control station lighting and power and current from the storage battery to operate the oil circuit breakers. At the far end of the platform are the exciters. The river end of the switching platform is shown on Figure 6, and carries the operator's desk and telephone booth and also three constant current transformers for street lighting circuits, together with their control panels. At the end of this platform is seen the storage battery room, from which comes the current to operate the circuit breakers. The switching platform, as will be noted, is at the same level as the platform around the new turbo-generator, and is approximately 3 feet above the old engine room floor.

Below the switchboard platform are the station bus and the oil circuit breakers, instrument transformers, disconnecting switches, etc., mounted on a pipe framework. The entire switching structure is enclosed by a wire grille to prevent accident. At the West Water Street end of the switching structure are placed the generator

rheostats, which are controlled from the switchboard on the operating floor above.

There were also installed in connection with the new plant, new concrete intake and discharge tunnels, with sufficient capacity to care for an additional unit when it is needed. A Rex revolving screen manufactured by the Chain Belt Company has been installed in the well at the mouth of the intake tunnel to remove leaves and other rubbish from the circulating water and prevent the blocking of condenser tubes.

At the completion of the work the grounds around the plant were graded, walks and roads laid out and grass seed sown, and a 7-foot wire fence was erected around the entire plant. Also, all the interior walls in the engine room and boiler room were painted, as well as the window sash, rails and all exterior trim. Figure 8 is a picture of the West Water Street end of the station and shows the fence, the grading and the new walk placed in front of the station.

Two other features of the station are worthy of comment. A small but well-laid-out repair shop and stock-room has been added, with two lathes, a grinder, a power hack-saw and other tools, besides bins and racks for storage of supplies. In this shop necessary repairs will be made on valves, machine parts, etc. Also, a toilet with a shower-bath and a small laundry with washing machine have been installed for the use of the plant operatives.

The city of Taunton has now a modern plant giving good economy and operated on sound business principles. Much credit is due to the present city administration in Taunton for the way in which it has handled the entire work.

The design of the new plant was carried out by Jackson & Moreland, engineers, of Boston, who also supervised the work.

ABOVE.—THE RINK IN USE

BELOW.—CLEANING THE RINK WITH TRUCK AND TRACTOR-DRAWN GRADER AND SCRAPER

The Care of Municipal Skating-Rinks

By T. H. Fewless
Superintendent, Recreation Commission

THE chief skating-pond in Highland Park, Mich., shown in the illustration above, is about ten acres in area, together with a hockey pen adjacent to the pond.

Of particular interest is the manner in which the ice is built up and cared for from the very start of the winter season. The pond is flooded in the fall, and after the first freezing it is used until 10 o'clock at night, at which time a power scraper and brush are used to remove the snow from the ice. Then, by the use of a 1¼-inch hose, using about three sets, the ice is sprinkled from that time until 10 o'clock the following day. In this way the surface of the ice can be kept smooth, filling up all the small cracks and furnishing a very satisfactory surface for the skaters each day.

The Menace of Traveling Carnivals

By John J. Birch, Pd.B.
Schenectady, N. Y.

ONE of the most demoralizing influences that have come in recent years into the summer amusement life is the traveling carnival. Last summer there were about 150 carnival companies with an average personnel of from 100 to 125 per company, making a total of from 1,500 to 1,800 public entertainers giving their showings in every state of the Union.

As a class, they are a menace to the community into which they come. They represent commercial amusements at their very worst, not merely because of cheapness and vulgarity, but rather because of brazen defiance of civic virtue and moral decency. The ministers, editors, reform workers and merchants are practically unanimous in their stand against allowing these marauders in their communities.

Methods of Operation

The carnival companies commonly arrive on Sunday and occupy a vacant block near several car lines or in close proximity to the center of the town. Here twenty-five or thirty tents are erected for the various concessions, such as the "Snake Charmer's Den," tub games, ball swings, Derby races and wheel booths.

Ostensibly, they come to a city under the auspices of some local fraternal organization or for a police or firemen's "benefit" in order to enlist the interest of more local people who will help to make their showing a financial success. The real reason why they generally come to a town under the auspices of a popular local order is because the majority violate one or more sections of the various state laws prohibiting lotteries, games of chance, obscene shows, etc., and the influence of some local organization is needed for protection from police interference.

The carnivals offer the organization a fifty-fifty proposition or a promise to boom the town, etc. It looks good from outward appearances and undoubtedly many good people go innocently out of curiosity. While there, they see something which shocks them and perhaps they protest verbally; but in many cases before the machinery of reform gets into motion, the carnival has disappeared, leaving behind it a trail of moral filth and slime for the town to clean up. It may take years for a community to recover from the effects of the visit of one unclean carnival. The promoters themselves are fully aware of this; but so long as they can "put it over once more" without dissenting voices, the chance is taken.

Gambling at Carnivals

Nearly every kind of gambling wheel and lottery is operated at these carnivals. The most common, however, is the fortune wheel, of which there are innumerable modifications, but all operated on the same principle. Suspended from a vertical support is a wheel, varying in diameter from two to three feet, on the rim of which is painted a series of numbers. The wheel is spun and allowed to revolve until it comes to rest. Further up on the support, just above the rim of the wheel, is a small index which points to a number when the wheel stops. Painted on a counter near the wheel is a series of numbers upon which the players place their money. If the wheel stops at a number corresponding to one on the counter, the person who has placed the required amount of money thereon wins the prize, whatever it be. Sometimes, instead of numbers being painted on a counter, wooden or pasteboard strips having numbers printed thereon are sold, and after the wheel has been spun and stopped, the person possessing a number corresponding to the one to which the index points receives the prize. These wheels are usually gambling devices in the strictest technical interpretation of the term—no skill whatever is involved, and the loser gets nothing at all. They are very profitable, netting from 3 to 500 per cent.

Some of the wheels are accurately balanced, so that it is a matter of pure chance just where the wheel will stop; but in many cases they are so adjusted as to stop at a number which is not printed on the counter

or pasteboard or wooden strips. Other wheels have brakes so arranged as to be electrically controlled by the operator, thus causing them to stop at any desired place. Other gambling devices involve a bit of skill, as throwing balls at dummies or in small pockets, or pitching rings over dolls or jack-knives, etc., but in general the element of skill is slight or suppositious.

There are also many so-called "games" being played at carnivals, the most popular among which are the "Derby Horse Racing Contest," "Round the World Aeroplane," "Yacht Race," and others of various names. The illegal thing about all such is that a charge is made for the privilege of playing and that a prize is offered to the winner, the losers receiving nothing for their money invested.

By legal decision, and after an examination of the paraphernalia and questioning of witnesses, it becomes a known fact that wheels and games at carnivals are mechanically crooked—that is, controlled at will by the operator and made to win or lose at his discretion. The surest proof that carnivals need crooked dice, marked cards, controlled wheels and the like, can be found in the pages of the organs of the trade, which are loaded with ads for swindling paraphernalia. If the carnivals are not debased by cheaters and fraudulent methods, why should the manufacturers of cheaters' devices seek them as customers? One that does not have crooked devices among the gambling paraphernalia is indeed an exception. The carnival managers have frequently admitted that they could not make their performances financially successful if they eliminated all gambling schemes and trick devices; that is, if the unlawful of the carnival were left out, they would have to close up and disband.

UNITED STATES PUBLIC HEALTH SERVICE
COOPERATING WITH THE
PENNSYLVANIA DEPARTMENT OF HEALTH
DIVISION OF VENEREAL DISEASES

S. LEON GARE, A. B., M. D., P. H. D.
DIRECTOR DIVISION OF VENEREAL DISEASES

Harrisburg, Pa.
July 18, 1922.

To:

Subject: Carnivals.

1. The State Department of Health has flat-footedly denounced the carnival. The average organization of this type carries with it a disease spreading personnel, which, in terms of disease, suffering and economic loss, far over-rides any small benefit which any organization backing such a carnival will obtain.

2. It is gratifying to note that public officials in this State, as well as newspaper editors, have promptly realized the disadvantages of having carnivals in their midst, and that the former have to a large degree, consistently refused to issue a permit for their showing.

3. From various newspaper clippings which reach our desk, it is noted that in many instances there has been an unintentional embarrassment to officials because a request for such a permit has been made by local organizations such as Fire Companies, lodges, etc.

4. We are aware that the public in general does not realize the disease menace feature connected with the average carnival. We are also fully aware that if the matter is properly brought to the attention of citizens and organizations, that they will be as interested in condemning amusements of this character as is the State Department of Health.

5. Information has just reached us that in one of the towns of this State, a local physician investigated the aftermath and found from the records of his brother physicians that a total of 342 cases of venereal diseases has been treated as a result of the carnival. Many of the victims being boys from 14 to 19 years of age. This speaks for itself!

6. This letter is not forwarded to you under the assumption that you have ever in the past backed carnivals, but merely to inform you of the facts connected with them, believing that when once known, you will take the proper stand in this very important public health matter.

Very cordially yours,

S. Leon Gare

S. Leon Gare, M. D.
Director

JCT:S

FIGHTING THE MENACE IN PENNSYLVANIA

The Prizes Offered

Every conceivable sort of article is used as a prize, and the display of them reminds one of a small department store. The operators of the booths can well afford a large display because of the very low cost at which the majority of the prizes are purchased. The most popular, perhaps, are the kewpie dolls, which wholesale at $35 per 100, but which represent to the fair operator a net return of several dollars each. Some of the large concessions offer manicure sets as prizes which they claim are worth $10 each, but which are advertised in the trade journals for $15 per dozen. In some localities, Chinese lucky rings branded "sterling" are used as prizes. The hawkers represent them as sterling silver having a face value of $1 each. The fair manager can purchase them for $12 per gross, or approximately 10 cents each.

Of the small articles used as prizes, necktie pins and cuff links are the most popular. The percentage is unusually high on these, for they are purchased for $5 or $6 per gross, or less than 4 cents apiece.

The Immoral Features

Carnival companies invariably include in

their "talent" one or more indecent shows under such names as "Living Pictures," "The Dancing Mermaids," "Oriental Dances," etc. Their advertisements, however, are replete with such phrases as "a clean show," "nothing to shock the most fastidious," "bright, clean and moral." Advance agents often go to the city officials and ask them to attend a special advance presentation of some of these features. During this special performance there is nothing in the least immoral or suggestive, and it meets the approval of the witnesses. But just as soon as they have left, the performance takes on a different aspect.

One of the most common is a show known under various names such as "Hoola-hoola," "Hawaiian Village," etc. It is referred to as a dance, but the performers, who are always woman, are more or less nude, and give a five-minute series of obscene contortions and suggestive pantomines to men only. Generally after that performance the barker inveigles as many men possible into an adjoining tent by a pretense that they may see the "real thing." A plain statement of conditions at this aftershow would be too obscene to be told or sent through the United States Mail.

Some of the carnivals, because of the immorality connected with them, may be fitly described as traveling dens of iniquity. Prostitutes who are either attracted to these carnivals or permitted to accompany them leave behind a trail of physical as well as moral contamination. Their trade is practised either in a side apartment during the hours of the showings, or at a hotel or house to which men are directed.

The Department of Health of the Commonwealth of Pennsylvania made the statement that reports from the state clinicians as well as local practitioners have indicated that the so-called carnival, by reason of its personnel, invariably adds to the incidence of venereal disease in the locality wherein it exhibits. These so-called carnivals are a direct menace to public health, the women employees being for the most part infected prostitutes. Evidence that the carnivals carry immorality and disease around with them throughout the whole of the United States is plentiful.

Perhaps there are few attractions at the carnival more appealing to the children than the pink lemonade booths. And perhaps it is the universal belief of parents that there is nothing more harmless for the children than this drink. But there is as much difference between homemade lemonade and circus drinks as between a mountain brook and a muddy river. Nothing in the world could be more unsanitary than many of the juice stands at carnivals, where thousands of lips have touched the same slice of lemon, which is used over and over again until worn out. The glasses are seldomly washed, or at best only dipped in dirty water. Mothers who at home are models of cleanliness allow their children to drink lemonade made of citric acid, red dye and dirty water stored in an unsanitary wash boiler or barrel and served from filthy glasses, from which hundreds have previously drunk. Enough of the ready mixed color and acid can be carried in a suitcase to make several hundred barrels of lemonade and orangeade. A few dozen will last through a whole week, for the lemon rinds are used over and over again.

Eradicatory Measures

Various measures have been taken to eradicate the evil influence of the carnivals. Some cities have banned them altogether, while others have made ordinances requiring them to pay various sums, some as high as $150 or $200 per day for the privilege of showing. There is not a state in the Union that does not contain some city that has taken action against carnivals. But these means are unsatisfactory, for as city governments change, the local policy regarding carnivals is sometimes altered also. The time is not far distant when all the states will enact laws prohibiting carnivals from showing. When it is remembered that the patronage of the 150 carnivals showing in the United States, with an average attendance of 1,000 persons per day for 6 months, totals 18,750,000 persons, the enormity of their influence is realized.

Such measures must come, and will come, when public sentiment has been thoroughly aroused and awakened to the evils done by the traveling and itinerate shows.

Comparison of Subdrainage of Highways by Deep Side Ditches and by Tile Drains

By Charles M. Upham
State Highway Engineer of North Carolina

AT the present time, road surfaces are standardized to such a degree that we can practically be assured of satisfactory results if they are constructed in accordance with standard specifications. In many roads, sections of the road surface have broken up, while in other places the surface has proved strong enough to carry the traffic. Investigation has shown that the cause of the failure was not due to the road surface itself, but to the failure of the subgrade or road foundation. This has started a thorough investigation of the subject, and before very long valuable data will be available. It is practically accepted that the bearing power of any soil or subgrade will vary inversely with the amount of water that the soil or subgrade contains. With this fact to work upon, it is readily seen that the more water present in any soil, the less will be its bearing power or carrying capacity.

What Is Subdrainage?

Subdrainage is another way of saying stabilization of subgrade or road foundations. Although we may go into this subject very carefully, very scientifically, and with much detail, we simply mean excluding moisture from the roadway, or draining moisture away from the roadway. If we look over some of the earlier highway literature, we find that one of the most emphasized details of construction was drainage of the highways. Nearly everyone would talk drainage and plan for drainage systems, but when they began to construct a road, the drainage system was generally excluded on account of its cost, and this money was usually spent in the construction of the surface. That this was an unwise practice has been too often proved. Many scientific data are now available which give us more information relative to the regulation of moisture in the subgrade and the practice of stabilizing road foundations.

Low Capillarity Essential to Good Subgrade

The extent of the effect of moisture on any subgrade depends upon the kind of soil in the subgrade, so that the selection of soils which go to make up the subgrade is one of the most important factors in road construction. This detail is many times overlooked. In clay soils it has often been found that the soil nearer the surface of the ground is more satisfactory for subgrade construction. This undoubtedly is due to the fact that the soil has been broken up by frost action, and that the finer material and colloidal matter has been washed out by the rains.

In the South there is what is known as top soil, which is a sand-clay composed of broken-down rock, from which the finer colloidal matter has been washed. With the varying effects of moisture on the different materials, it can be seen that the selection of soil for a subgrade is very important, and it is absolutely necessary to get a material of low capillary attraction and resulting high bearing value in the top of the subgrade. Many times the mistake has been made of taking all material from cuts and throwing it indiscriminately in the fills, whereas it would be to the great advantage of the road to select the material generally from the top of the cut and place this material on the top of the fill. In that way we should have the better material in the top of the subgrade, and this would afford a higher bearing power for the construction of a road surface, which would have the same effect as increasing the depth of the slab.

Stabilizing the Subgrade

It has been found and accepted by road builders that the most economic method of stabilizing the subgrade is simply to take away the water from the road foundation, or, better still, keep the water from getting into the subgrade. Therefore, one of the first principles in road construction is to so

construct a drainage or subdrainage system as to pipe away all springs or water from any source whatever, so that at no time would it be possible for any of this water to enter the subgrade and thus reduce the bearing power of the subgrade.

This can generally be done by constructing ditches parallel with the roadway, the bottom of which is from 10 to 18 inches below the subgrade or foundation of the roadway. When a road is hard-surfaced, it prevents any water from entering the subgrade from above, at least until it has run to the edge of the pavement. The lateral side ditches intercept any water from horizontal capillarity or side seepage. There only remains, then, the water which rises up through the ground by capillary action. This is the most difficult and expensive water to take care of, and it can readily be seen that on account of the varying of capillary action in different soils, the selection of subgrade material is very important. It can safely be said that the amount of water drawn up into the subgrade depends upon the supply and the class of material in the subgrade. Generally speaking, the coarser the material, the less the capillary action, and the reverse is also true to the extent that the finer the material, the greater the capillary action; within certain limits the capillary action in the coarser material is quicker than in the finer material, but the ultimate amount of water raised, and the height it is raised, are not so great in the coarse material as in the fine material. Inasmuch as it is the amount of water present in the subgrade that influences the stability of the subgrade, it can be seen that in selecting material for the road foundation the coarser material should be selected.

From experiments performed by the Bureau of Public Roads it has been determined that the capillary water in a subgrade is greatest directly underneath the hard surface slab, which means that the part of the subgrade which should be the most stable is in reality greatly reduced in bearing power. The problem, however, is to substitute for this portion of the subgrade a material which is less affected by the amount of water, or which has lower capillary action; which also means that the water does not rise so high in this particular selected material. This is another way of saying that the subgrade is more completely stabilized by this selected material, because the amount of water in the subgrade directly underneath the slab has been excluded by the selected material.

The Effect of the Cross-Section

Various cross-sections of roadways have been designed for the purpose of doing away with these various conditions, and, of course, one of the universal means of dealing with this matter is the side ditch, which intercepts any water from the sides, which would otherwise get into the subgrade.

This brings us up to the comparison of the side ditch and the tile underdrain, which generally consists of a ditch at the bottom of which is a pipe laid with loose joints, the ditch then filled in with crushed stone.

It has been thought by many that since this was called a drain it effectively drained all the water from the subgrade, but, undoubtedly, in many soils this drain did little or no good other than to intercept any free water which might otherwise find its way to the subgrade. In other words, it is quite likely that this drain was only effective in taking away free water that came from the surface or seeped through the ground horizontally.

It is quite doubtful if any drain ever carried away any appreciable amount of water which rose by capillary action. Therefore, it can be seen that neither the open ditch nor the tile underdrain is sufficient to cope with the capillary water in any subgrade. We must therefore design against capillary water in addition to the longitudinal drains.

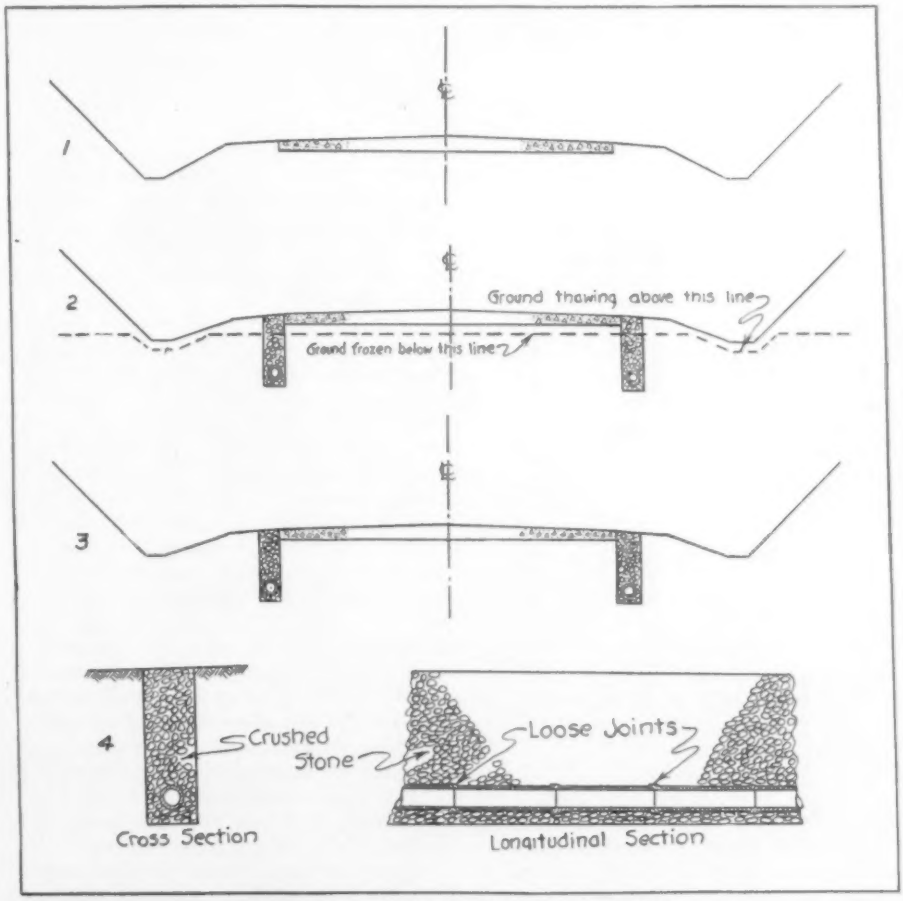
Location of Tile Underdrains

In the subject of tile underdrains there is a question as to their location. While the longitudinal underdrain will serve the purpose of intercepting water which would otherwise find its way to the subgrade, quite often transverse drains are necessary for the purpose of taking away water from springs or streets which carry water underneath the road. The number and location of these drains depend upon conditions and the amount of water which finds its way underneath the roadway. To carry the question of transverse drains a little further, and to more completely develop the idea, selected material which can be easily drained is sometimes placed underneath the road surface in thicknesses varying above

2 inches. This material should be connected up by drainable material to the nearest drain or ditch. This is another very effective means of reducing the amount of water underneath the road slab, which, again, is a means of increasing the bearing value of the subgrade or road foundation.

The location of a lateral or longitudinal drain has been the subject of considerable discussion. One suggestion is to place the drain directly underneath the ditch, but this seems to be an improper place, on account of water flowing in the ditch carrying the finer silt particles into the drain, which gradually makes it less effective. It is undoubtedly better to construct the drain higher up on the shoulder and a little nearer the roadway surface.

There are many methods now being devised for the treatment of subgrades in order to overcome the water of capillary, and, to insure more complete stabilization, various chemicals are being used to experiment in the treatment of subgrades. Water-gas tar is a substance which has been used in subgrade experimentation. Other experiments show that portland cement has an advantage in stabilizing subgrades. Experiments



TYPES OF DRAINAGE SYSTEMS FOR ROADS

1.—A deep side ditch acting satisfactorily as an intercepting drain, but acting as a hazard to traffic and not completely correcting the capillary water under the road surface. It is impossible to maintain this ditch by machine.
2.—A gutter ditch providing drainage for free surface water while the tile drain and lower strata are frozen. It is easily maintained by machine.
3.—Combined gutter ditch and intercepting tile drain, easily maintained by machine.
4.—Cross-section and longitudinal sections of tile drain shown in 3.

with low capillary material suggest that cinders, sand, gravel, or crushed stone will bring about a stabilized subgrade only in a different manner. In all cases, the treated or selected subgrade material should be connected with the tile drains or ditches or drainage system, by means of the most drainable material, and the subgrade, even if built of selected material, must be so constructed as to drain as completely as possible.

Open Ditch vs. Tile Drains

We are now at the question of the comparison of the open ditch and tile drain. Neither of these is a cure-all. In some instances they help materially, but in other cases their effect is slight. There is a particular experiment which has been watched for several years. It is a surface-treated macadam road. This particular road broke up every spring as the frosts came out of the ground. A complete investigation was made, and what remained of the macadam surface was cleared away. Although it was expected to find a spring underneath the roadway, the only thing which was found was a layer of clay somewhat over an inch in thickness. This layer of clay was slightly tilted, to such an extent that water would percolate through the ground until it reached the impervious clay, and then it would follow along on top of the clay and appear underneath the road surface. This so weakened the road surface and subgrade that it broke up each year. It was noticed that this stratum of clay was underlaid with a very coarse and easily drained sand, and the water which had collected was easily drained down through the hole cut in the clay stratum. This matter is being mentioned in order to show that the flow of water in certain soils is very slight and that tile drains will have very little beneficial effect.

In many instances it has been found that the flow of water in different soils varies from 1 foot a day up to 20 or 30 feet a day in clay soils. There is some question relative to the depth of drains and ditches. It is very evident that a ditch will intercept water the same as a tile underdrain, and also that the tile underdrain will have the same effect in intercepting water as an open ditch. It is assuming that both are maintained. It is quite evident that it is more difficult to maintain a ditch than an underdrain on account of the fact that in tile drains the pipe is always available for the free water, whereas if an open ditch becomes stopped up, the free water is backed up and allows a bigger supply of water for capillary action in the subgrade. The deeper the ditch, the more difficult it is to maintain. One more important point is that a deep ditch must be maintained by hand, which should eliminate this kind of ditch for consideration except where the depth of the ditch is necessary for water drainage. In many instances a shallow ditch can be maintained by a road machine.

The value of a tile drain is sometimes completely lost under certain conditions of frost, and in many instances the effectiveness of a tile drain is practically of no value, although there may possibly be a very slight movement of water through frozen ground. In this particular instance, no doubt the open ditch would be more effective, especially in taking care of any surface water, which through certain weather conditions, such as a thaw, might be present.

Probably the most critical time for any road is after the ground has been frozen for two or three feet. Under these conditions the effect of the tile drain would be greatly reduced. If this freeze is followed by a thaw, the surface of the road is first affected and this condition brings about an excess of water on the surface of the road and directly underneath the slab. On account of the frozen material underneath, the free water cannot pass down into the drain, and thus, in this instance, the value of a tile underdrain is reduced to a minimum. A more effective solution in this case is a shallow gutter. By this is meant a gutter from 10 to 18 inches below the subgrade, with the shoulders and slopes so constructed that surface water and any free water occasioned by a thaw can readily find its way to the gutters.

It is assumed that all underdrains and ditches are constructed to grade and will thus quickly carry away any free water. Another very important point is that any free water which might for any reason exist in the subgrade must have a means whereby it can pass off immediately to the drain or ditch. In the case of ditches the existing conditions must be thoroughly

studied before the location and depth are determined. If you are constructing a road on a fill, there is, of course, no water to intercept, but in a cut which is on light grades or on side-hill work, an intercepting ditch is very effective. On the heavier grades it is not necessary to make the ditch as deep as on the lighter grades, for the grade of the roadway has the same effect as the deeper ditch. If the ditches drain readily, all indications seem to point that it is seldom necessary to construct any ditch deeper than 2½ or 3 feet below the grade of the road. It is sometimes necessary to do so to get a suitable grade to drain the system.

LAYING SUBDRAINS AT SIDE OF ROAD, MONTGOMERY COUNTY, MD.

Summary

In summarizing: No distinct advantage can be claimed for the tile drain above the open ditch; nor can it be said that the open ditch is more favorable at all times than the tile drain. But there are certain conditions where a combination of the two will be the most practical. If an open ditch is used, there is no advantage in making it any deeper than to intercept water, and it should not be so deep that it cannot be maintained by machine; otherwise the maintenance will be a costly item. An open ditch can be used to intercept water as effectively as a tile drain. The open ditch must be constantly maintained, and it presents a hazard to traffic. On the other hand, a tile drain will serve as well as an open ditch when used to prevent water from getting under the roadway. The maintenance of a tile drain is generally less than that of the open ditch, although often its original cost of construction is greater. At no time does the tile drain present any hazard to traffic, and for this reason it should be given serious consideration.

Although no decision can be made to the extent of stating that either the open ditch or the tile drain is preferable, it can safely be said that there are conditions when it is more economic and desirable to use either one or the other. After a careful consideration of all the details, it seems quite likely that a combination of the open ditch and the tile underdrain is more suitable than either the one or the other.

In no case is it necessary to construct the open ditches or tile drains lower than that point which will intercept water, for in practically no instance do the drains reduce the amount of capillarity, and, after all, a combination which will most economically reduce the amount of moisture in the subgrade is the method to be selected, taking into consideration the first cost and cost of maintenance, and giving due consideration to any hazards which might be interposed on account of the open ditch.

Acknowledgment.—From a paper read at the Eighth Annual Conference on Highway Engineering at the University of Michigan.

Health officers should establish cordial relations with every agency in the community working for the public good—especially the newspapers. The best-informed people are always with the health officer in spirit. It must therefore be his care to let them know what he is trying to do, that they may be given an opportunity to aid in the good work.

How Pittsburgh's Graded Tax Law Is Working

By J. Ralph Park

Executive Secretary, Allied Boards of Trade, Allegheny County, Pa.

A DEMONSTRATION of the effect of shifting the tax burden from houses, which are a product of industry, to land values, which are created by the community, is being carried on in Pittsburgh under what is locally called the "Graded Tax Law," which applies to second-class cities in Pennsylvania. This law provides for the lowering of municipal taxes on all improvements on real estate at the rate of 10 per cent every three years until the rate on buildings is one-half the rate on land. At the present time buildings in Pittsburgh are assessed 60 per cent of the amount assessed on land, and the next reduction of 10 per cent will be made in 1925.

This system of taxation exists as the result of an effort to correct the old plan of assessing large tracts of land held out of use for speculation as "agricultural" and charged one-half the tax rate, and "houses surrounded by trees and shrubbery" as "rural" at one-third the tax rate, which was abolished in 1911. The campaign of education which was carried on among the civic bodies for several years prior to the abolishment of the old system created so much interest in taxation that at the next session of the Pennsylvania Legislature in 1913 the "graded tax law" was secured. Mayor William A. Magee, who was then in office, and who was reelected in 1921, favored this legislation and was largely responsible for its passage.

At the time of its passage, the graded tax law was very much needed; for, owing to wild speculation in land values fifteen and twenty years ago, the prices had been boosted beyond reason, new plants were prevented from locating in the city, home building was handicapped, and rents were increased. It was thought that the new law would stimulate building and tend to prevent further inflation in land values, all of which has been borne out by experience.

Since the war most cities have had considerable land-value inflation, while in Pittsburgh the prices of land have had a tendency to remain stationary, so that such prices in competitive cities are now equal to, or higher than, those in Pittsburgh. This will insure to Pittsburgh a greater growth during the present decade than during the past decade, when it was handicapped by prohibitive prices asked for land. Large landed estates which have been held out of the market for several generations, with a fixed "no sale" policy, are now beginning to sell at reasonable prices.

The beneficial effects of the Graded Tax Law are most clearly demonstrated by the increase in the number of houses built since this law went into effect. In fact, the city is now in the midst of the greatest building boom in its history, encouraged largely by the fact that, beginning this year, improvements on real estate will be taxed only 60 per cent of their value.

These results have been secured without any disturbance of the ordinary real estate market. The total assessed value of land is about double the total assessed value of improvements, the reduction of 40 per cent on buildings having meant an increase on land of only 20 per cent. In fact, so gradually has this shifting of the tax burden been accomplished that many of the average taxpayers have been unconscious of it. However, when an attempt to repeal the law was made at the last session of the Legislature by some of the politicians representing the "big interests" in vacant land, there was a unanimous movement among the various civic bodies, labor unions, etc., including the Chamber of Commerce, which had originally opposed the law, vigorously protesting against the repeal, and the bill was never brought out of committee.

High prices for land handicap both labor and capital, and it is believed that Pittsburgh has demonstrated in a practical way the advisability of removing taxation from the personally created values of industry and placing it where in all equity it belongs—on the community-created values of land.

Forward Steps in Municipal Affairs

Mayors

A Municipal Golf Course the Gift of a Bishop

SALT LAKE CITY, UTAH.—The beautiful golf course recently presented to Salt Lake City by Bishop Charles W. Nibley consists of a rolling tract of land 56 acres in extent. This course is within the corporate limits of Salt Lake City and is only about a ten-minute drive from the heart of the business district, over a paved street. A splendid street-car service takes one to the club house door.

This tract of land has a unique and interesting history. Soon after the arrival of the Mormon pioneers in Salt Lake Valley in 1847, David Calder located on this land, and successfully farmed it for a number of years. Near the south line is a beautiful natural lake of about five acres in extent, surrounded by native shrubs and trees. Mr. Calder was quick to grasp the wonderful possibilities here presented for a natural park, and proceeded to capitalize the idea. A successful pleasure resort was operated here for a number of years and was known as Calder's Park.

Later on, a number of prominent business men of the city formed a corporation and purchased this property. The name was changed to "Wandermere." The natural beauty of the place was enhanced by scientific landscape gardening, and modern amusement park equipment was installed. A few years ago the Latter Day Saints Church acquired title to this property and laid out the present beautiful golf course.

The City Commission had for some time been besieged with requests from different civic and business organizations for a municipal golf course. During this time Bishop Nibley, who is a keen lover of the game of golf, had acquired by purchase from the church the title to the beautiful Wandermere Park golf course, with the thought in mind of presenting it to the city.

On Christmas Eve of 1921, Bishop Nibley called the Mayor to his office and handed him the deeds conveying to Salt Lake City this splendid property, and expressed the happy thought that this would

THE SNOW-CLAD MOUNTAINS OF THE WASATCH RANGE MAKE A FINE BACKGROUND FOR SALT LAKE CITY'S NEW MUNICIPAL GOLF COURSE

be his Christmas present to his fellow citizens.

The necessary legal details attended to, including a resolution passed by the City Commission accepting the munificent gift and designating the plot of ground as "Nibley Park," the formal presentation exercises were held at the park Saturday, May 20, 1922.

An appropriate program was carried out. One of the interesting numbers was an exhibition game of golf between Gix Von Elm, Western amateur champion, and Miss Florence Halloran, Utah and Southern California champion, both of whom are from Salt Lake.

Bishop Nibley, in formally presenting Nibley Park to the citizens of Salt Lake City, spoke as follows:

"It has given me great pleasure to present this tract of ground, now known as Nibley Park, to our beloved city of Salt Lake.

"Truly, it is more blessed to give than to receive; especially if the gift is from the heart and is intended to be of service and benefit to others. Any genuine soul with a spark of God's nobility in him may find the truest happiness in lovingly and loyally giving.

"The praises of men, like their censures, are altogether fleeting and transitory. There can be little in all that to satisfy and encourage good deeds. But when I think that this generation, and generations of men and women yet to come, shall find health and enjoyment and rare pleasure here in playing that splendid outdoor Scotch game known as golf, and also in other outdoor amusements which shall not interfere with golf, that thought gives me the highest satisfaction and most genuine pleasure.

"And in this thought, Mr. Mayor, and in this spirit, I most cheerfully make formal presentation of Nibley Park to Salt Lake City."

In accepting the park, the Mayor declared that there had been too few of such gifts in the past, and he urged that others, like the honored guest, be moved to confer on the city in the future such monuments as did Bishop Nibley in giving Nibley Park to the City.

C. C. NESLEN,
Mayor.

Park Departments

Does the Public Attend the Great Free Park Concert?

CINCINNATI, OHIO.—Every so often the question is raised by city fathers, who seek to increase the usefulness of the public parks in their care, "Do carefully-planned programs for Saturday or Sunday afternoon concerts really pay, in the sense of attracting really good-sized crowds?"

Cincinnati, which has long been a notable music center, is prepared to answer the question most heartily in the affirmative.

In Cincinnati public-spirited citizens have raised sufficient funds to provide for Sunday afternoon park concerts in two of the largest suburban parks.

SOME OF THE THOUSAND AUTOS PARKED AT EDEN PARK, CINCINNATI, DURING A CONCERT

In each of these parks, weather permitting, fifteen concerts are given between the first of June and late fall. An orchestra of thirty-five men provides the backbone of the program. The soloists who take part very frequently donate their services, or make a nominal charge. As a result, the Board of Park Commissioners finds that $190 covers the entire cost of holding a concert, even to the thousands of leaflet programs distributed by Boy Scouts and police to the crowds.

Such count as is possible with affairs of the

A SIGNBOARD THAT MADE PEOPLE THINK
The Kansas City Park Board's answer to the offending grocery store

sort has been made on many occasions, and it is found that never less than fifteen, and more often twenty, thousand persons attend the average concerts. Special programs announced in the press the day before often bring twenty-five thousand persons to a park to hear the music.

To-day the automobile is employed by the concert-goer. The photograph shows some of the long lines of cars parked in Eden Park during a concert. Police statistics show that seldom less than a thousand cars are parked.

These facts, along with innumerable others in possession of the Park Commissioners, have convinced the Park Department that any investment of recreation funds in popular outdoor public concerts is certain to meet with the most widespread approval, and is, therefore, an investment which most certainly pays.

C. H. MEEDS,
Engineer and Executive Officer, Board of Park Commissioners.

"Park and Plan Week" Arouses Much Interest

Kansas City, Mo.—The Park Board's program for future development received added impetus in a recent four-day celebration of the thirtieth anniversary of the park and boulevard system of Kansas City. The observances included a tribute to the city's pioneer builders; a floral parade; band concerts, community sings and short addresses; a children's pageant, showing the development of the city's beauty-spots; and a big, all-day "town picnic."

The whole purpose of the celebration was expressed in the slogan, "Recall the Past and Vision the Future." The program was designed to celebrate past achievements and impress their extent and value upon residents of the city, and to bid for a reawakening of public spirit in park improvement. Credit for Kansas City's park and boulevard system, now acknowledged one of the best in the country, belongs largely to a few men of vision and generosity, who gave large tracts of land and fostered ordinances restricting certain districts and providing for the building and maintenance of parks and drives. It was partly to keep their work fresh in the minds of the present generation that "Park and Plan Week" was observed.

The extent to which the Kansas City Park Board is ready to go to protect its parks

and boulevards was demonstrated on the day of the parade.

A grocery firm had erected, over the protest of the Park Board and property owners in the block, a one-story store building on Benton Boulevard, one of the city's most beautiful residence streets. Efforts were made to stop the project, for the stores were built on a level and flush with the sidewalk, breaking a vista made by a low, rolling terrace and fine residences well back from the street. But the owners of the structure went ahead, finished their building and occupied one room as a grocery, renting the other for a drug store.

A few hours before the floral parade, when thousands passed the place, the Park Board caused a neat white signboard, lettered in black, to be erected on Park Board property, alongside the building. One side of the board bore this message:

> All persons who favor putting stores in residence districts, such as this, should patronize these two little stores. Those who hold the contrary opinion will not.

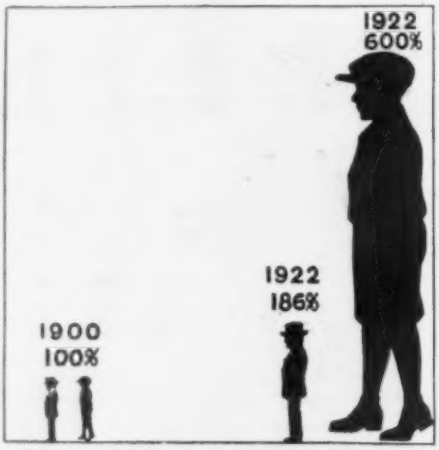
The other side of the board carried a brief outline of the fight to bar the stores and a statement that they were erected against the wishes of property owners in the block.

W. C. SCARRITT,
President, Park Board.

Departments of Education

Duluth Votes Half-Million for Schools

DULUTH, MINN.—On July 15 the voters of Duluth went on record for a liberal educational program. As a result, there will soon be issued $500,000 of bonds which will bear interest at 4¾ per cent and will mature serially in 10 years. In the local advertisement announcing the bonds, it was stated that the proceeds were to be used "for acquiring school sites or making such alterations and repairs as are at present necessary." The intention of the School Board is to use some of the money to cover immediate necessary repairs; to refund the amount so used when tax levy receipts are received; and eventually to use the entire sum of one-half million dollars for the acquiring of suitable sites for schools.



CARTOON SHOWING RELATIVE GROWTH OF POPULATION AND OF SCHOOLS, USED IN DULUTH'S BOND ISSUE CAMPAIGN

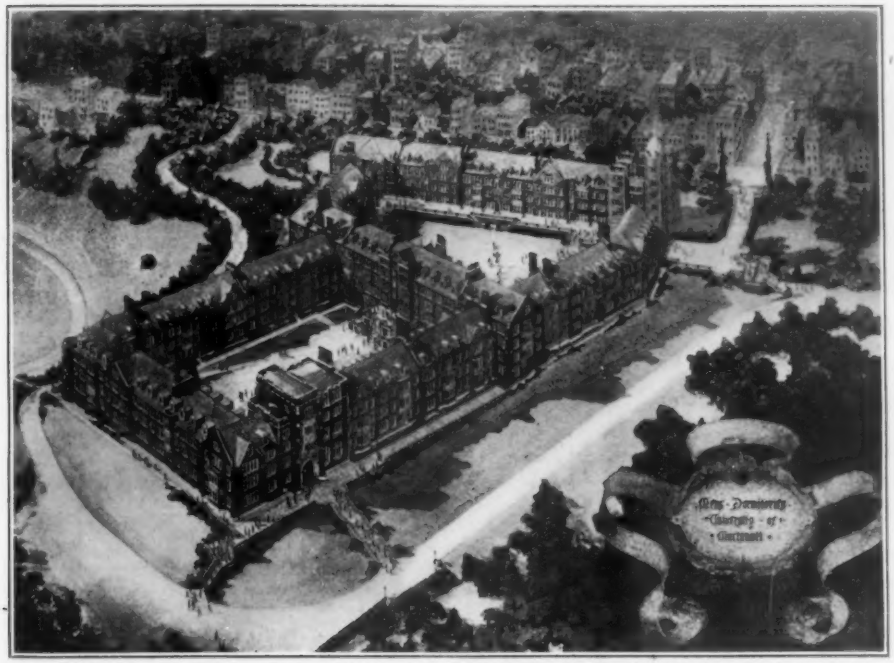
The vote on the bond issue was 3,738 for, and 1,202 against. This is considerably more than the two-thirds majority of all the votes cast necessary to carry the issue. The total vote was only 4,940, although the last municipal registration showed 22,000 voters.

The School Board elections are held independently of the city government. In Duluth the City Council has no control over the school system nor anything to do with it. A non-salaried Board, elected at large, controls school activities, and this Board makes its own levy and conducts its own elections.

S. M. CHAMBERS,
Taxpayers' League of St. Louis County.

Cincinnati's Municipal University to Have Big Dormitory

CINCINNATI, OHIO.—One of the most complete dormitories in the United States has been planned for the University of Cincinnati, one of the few municipally owned colleges in the United States. When it is finished, the dormitory will house about 1,100 students. The project will be carried out in units, the first of which is being built at the present time, in the southern end of the campus, just across the roadway from the present gymnasium, which stands above Carson Field, the athletic grounds of the University. The complete dormitory will stretch from a point opposite the gymnasium to Calhoun Street, which is more than a city block distant.



ARCHITECT'S DRAWING OF THE MEN'S DORMITORY FOR THE UNIVERSITY OF CINCINNATI

This first wing will house about 250 students. It will not be ready for the first semester this year, so students will continue to board at fraternity houses or in private residences and the Y. M. C. A. Alumni of the University of Cincinnati feel that college spirit, hitherto lacking at the University, will be fostered through the erection of the dormitory, which will cause students living in the place to eat, sleep and "fight" for the institution. The development of good athletic teams at the college has been going forward, and now it needs but a dormitory to make Cincinnati a factor among the big colleges of the country.

The project, as a whole, will cost about two million dollars, and this means necessarily slow, if sure, progress toward the completion. The wing now being built is shown at the extreme left of the reproduction. The middle wing will be in the form of a memorial to former students of the institution who served in the World War. The dormitory was planned by Harry Hake, architect, and Charles H. Kuck, associate.

ALLISON F. STANLEY,
Director of Public Relations, University of Cincinnati.

City Planning Commissions

Hillside Streets Require Special Treatment in City Planning

PITTSBURGH, PA.—Many younger and smaller cities can learn a useful lesson from the difficulties encountered by the Citizens Committee on City Plan of Pittsburgh in connection with the proposed widening of some of Pittsburgh's hillside streets. At best, street widening is a difficult and expensive process, but the undertaking may become almost impossible on a hillside where lack of forethought has allowed the streets to be narrow, and an intensive development to grow up on them.

In the Citizens Committee report suggesting a major street plan for Pittsburgh there are shown, among others, the two illustrations here reproduced, and a special topographic map. The latter was prepared to show the topography as if it were modeled, and the lines of the proposed main

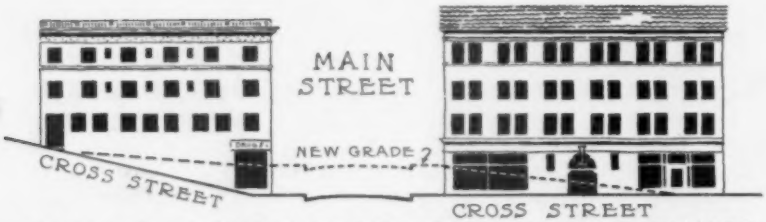


FIGURE-1- SHOWING BY DOTTED LINE HOW CHANGE OF ELEVATION OF MAIN STREET AFFECTS GRADE OF INTERSECTING STREET

ONE OF THE EFFECTIVE ILLUSTRATIONS IN THE PITTSBURGH COMMITTEE'S REPORT

thoroughfare plan were placed thereon. The map indicates clearly the general conformation of the hills and valleys, even though the scale of the drawing is too small to show lesser differences in elevation which are yet obstacles to the development of streets. Only such a map will make clear the reason for the winding and circuitous character of many of the principal thoroughfares. The difficulties are more fully realized when it is noted that many of the minor streets have grades as steep as 15 per cent, while some are up to as much as 20 per cent. Within the city the variation in elevation is as great as 500 feet.

To change the grade of a thoroughfare frequently entails changing grades of intersecting streets; and the widening of a thoroughfare, especially if it lies along a hillside or if the cross-streets are not level, affects the cross-streets in a similar manner. It will be seen at once that under any such conditions the cost is much greater than would be the case if only the main thoroughfare itself were affected. This characteristic, peculiar to such topography as Pittsburgh's, makes such improvements cost much more than in other cities which have more favorable topography. These physical and financial difficulties are important causes of the city's failure to develop heretofore a more complete and adequate main thoroughfare system.

FREDERICK BIGGER,
Architect and Town Planner, Citizens Committee on City Plan of Pittsburgh.

Public Works Departments

Omaha's Municipal Coal Yard

Omaha, Nebr.—When retail prices of coal in Omaha began to soar, in the first autumn of the war, City Commissioner Daniel B. Butler began to look around for a remedy. In the city charter he found a paragraph which gave the city the power to sell coal to its inhabitants, provided it charged only the cost of the coal plus the cost of handling it.

When he offered a resolution in City Council to open a municipal coal yard, he met tremendous opposition. Other council-

FIGURE-2- SHOWING BY DOTTED LINES HOW WIDENING A HILLSIDE STREET CHANGES GRADES OF CROSS STREETS

ANOTHER ILLUSTRATION FROM "A MAJOR STREET PLAN FOR PITTSBURGH"

men opposed it as a radical departure from precedent. However, the municipal coal yard was opened that fall, handling a line of coal from Montgomery County, Ill., and selling it at $4 to $5 less than was being charged by the coal dealers. A little less than 5,000 tons was sold and delivered by the municipal coal yard that winter.

The following year more than 8,000 tons was sold, most of the coal coming from one large mine in Colorado. Sales during the winter of 1919-20 totaled 6,564 tons, at prices ranging from $9 to $7.50. In 1920-21 they reached 12,819 tons. Last winter was a mild one, and sales were 10,052 tons. The price was $10.50 and $10 delivered, or $1 a ton less if the purchaser hauled it.

The total cost of last winter's coal handled by the municipal yard was divided as follows: cost of coal at the mines, $32,766; freight, $52,608; printing, $200; wages, $2,020; salaries, $915; hauling, $14,916; miscellaneous, $181; advertising, $88; and telephone and telegraph, $86. Total, $103,780. Receipts for coal were $103,837.

The amount received for the coal was just $57 more than the cost. The yard costs the city not a penny. Everything in connection with the cost of the coal, from hauling to clerical work, even telephone service, is charged to the consumer. But no profit is made.

MONTAGU A. TANCOCK,
Publicity Manager, Omaha Chamber of Commerce.

Fire Departments

San Francisco Provides Home for Fire Chief

SAN FRANCISCO, CALIF.—This city has recently provided a building to be used by present and future fire chiefs as their residence. The house, which was built by the city at a cost of approximately $25,000, provides on the first floor a garage for the fire chief's private automobile and for the official car in which he drives to all fires. The doors to that part of the garage for the official car are opened automatically. At the left of this section there is a room which is equipped with beds for the drivers of the chief's cars. The window of this room opening on the street can be seen in the accompanying illustration.

On the second floor are the chief's bedroom, parlor, dining-room, kitchen, and small breakfast room, and on the third floor there are three bedrooms and a sewing room. In addition, there are suitable baths on all three floors and an office for the chief on the ground floor.

Immediately in front of the house is a flagpole surmounted by an electric light with a red globe. A tablet between the two garage doors has a bronze memorial erected to the memory of Dennis T. Sullivan, one of San Francisco's best known fire chiefs, who was killed on duty during the fire of 1906.

SAN FRANCISCO'S FIRE CHIEF NOW HAS A HOME PROVIDED BY THE MUNICIPALITY

So far as is known, San Francisco is the first city to provide a permanent home for its fire chief. The reasons for having an official residence are of course stronger in the case of the fire chief than they are in that of any other official, for in no other case is speed in getting to the point of danger so vital.

J. S. DUNNIGAN,
Clerk of the Board of Supervisors.

NEW OFFICIAL FLAG, PHOENIX, ARIZ.

City Clerks

Phoenix Adopts an Official Flag

Phoenix, Ariz.—As a result of an ordinance recently adopted, the city of Phœnix now has an official flag, the design of which is shown in the accompanying illustration. The official description is as follows:

"Phœnix bird in grey on gold sunburst background on a blue ground. White ribbon scroll along lower part of flag, on which is the following legend in gold: 'City of Phœnix, Arizona.'"

Much interest has been shown in the new flag, and it is expected that it will be flown on all public occasions.

GEORGE KIRKLAND,
City Clerk, Phoenix, Ariz.

Public Safety Departments

"Don't Kill a Child"

Oak Park, Ill.—For several months the Safety Commission of Oak Park has been carrying on a program to promote interest in public safety measures, and particularly those relating to protection of children.

A SIGN AT OAK PARK, ILL., THAT COMPELS ATTENTION

Fifty signs similar to the one in the photograph have been installed at various locations in the village. The signs have been the subject of a great deal of comment, some favorable and some not, and have served the purpose of arousing interest in the matter of public safety. Creating interest in public safety necessarily precedes safe conduct in public places.

DUDLEY C. MEYERS,
Assistant Secretary, Safety Commission.

ANOTHER WAY OF WARNING MOTORISTS TO WATCH OUT FOR CHILDREN

The World's Largest Municipal Distributor of Electricity

A Statement Furnished to THE AMERICAN CITY by the Department of Public Service, Los Angeles

THE city of Los Angeles recently established itself as the largest municipal distributor of electricity in the world when it consummated the purchase of the distributing system, within that city, of the Southern California Edison Company, a large private power corporation.

With a highly successful hydroelectric power generating and distributing system already in operation, Los Angeles increased its municipal electric system tremendously by the purchase of these lines for a consideration of approximately $12,000,000. The consummation of this notable transaction, marking as it does the steady development of municipal ownership of public utilities in Los Angeles, came at the end of a three-year fight on the part of the city to take over the Edison Company's properties. As far back as June, 1919, the people of Los Angeles by an overwhelming vote authorized the issuance of $13,500,000 in bonds to be used, in the main, to purchase the electric distributing system of the large private corporation. Interests unfriendly to the wishes of the people in this direction immediately instituted litigation against the bonds and succeeded in holding them in the courts until the spring of this year.

Prior to taking over the distributing system of the Southern California Edison Company, the city of Los Angeles had in operation an electric system under the direction of its municipal Bureau of Power and Light, which in June of this year was serving about 20,000 consumers. In taking over the lines of the private power company, the city added 120,000 consumers to its system, so that it is now serving 140,000 consumers in Los Angeles with light and power. Immediately upon acquiring the lines of the Edison Company, the Los Angeles Bureau of Power and Light reduced the rates of the 120,000 new consumers, on the average of 12 per cent, in order to make the rates of these consumers conform to existing municipal rates. This rate reduction effected in one sweep a saving to these 120,000 consumers of more than $600,000 annually.

Added significance is given to the reduction of rates to its new consumers when it is noted that provision has been made by the city whereby the interest and annual repayments on outstanding power bonds are borne entirely from revenues derived from the sale of light and power. With an investment of more than $25,000,000 in its electric generating and distributing system, the city during this fiscal year, beginning July 1, will meet from power revenues interest and principal repayments on electric plant bonds amounting to about $1,800,000.

This means that the ownership and operation of a large and growing electric generating and distributing system by the city is not now costing its people one cent in additional taxes. It may well be understood why the people are enthusiastically in favor of their municipal light and power system when it is explained that electric rates in Los Angeles are from 30 to 40 per cent lower than those generally charged elsewhere in California. Low municipal rates, it is commonly conceded, have not only made possible the rapid industrial development of Los Angeles but have also forced competing private power companies to lower their rates within the limits of the city. With the taking over by the city government of the Southern California Edison Company distributing system in Los Angeles, only one other private power company now remains in that field. It has been authoritatively stated that preliminary negotiations have already been set under way looking toward the taking over of this system by the municipal plant. At the present time, the municipal Bureau of Power and Light serves more than two-thirds of the consumers in Los Angeles.

The existing hydroelectric generating system of Los Angeles at the present time has all its plants along the line of the famous Los Angeles aqueduct, which stretches over

mountains, valleys and deserts for a distance of 250 miles and delivers water from the high Sierras to the people of the Southern California metropolis. Extensive plans are now under way for the development of large quantities of additional hydroelectric power by the city. These plans are being perfected by Chief Engineer William Mulholland of the Public Service Commission and Chief Electrical Engineer E. F. Scattergood of the Bureau of Power and Light. Los Angeles is deeply interested in the construction of a huge dam, under the direction of the Federal Government, at Boulder Canyon on the Colorado River. A dam at this point, constructed along the lines suggested by Director Arthur P. Davis of the United States Reclamation Service, would develop 600,000 continuous horse-power of electric energy. Los Angeles has officially expressed itself as desiring to share with other municipalities and districts of the Southwest in the development and use of this tremendous hydroelectric power.

The largest municipal hydroelectric plant of Los Angeles is shown on the front cover of this issue.

Dangerous "Amusement Devices"

JUST about thirty years ago the Chicago World's Fair gave birth to the mechanical "amusement device," which since then has come to infest every private park in the country and some public parks. During that time a record of accidents and fatalities has been piled up against these machines which characterizes them as not merely a public nuisance but a public menace. Last week [in June, 1922] a degenerate descendant of the Chicago Fair family, a small Ferris wheel, blew down in a wind storm, adding seven or eight more to the list of victims of amusement devices.

It is time to put an end to this bad record. Two courses are open. If the thrill-making machines built for the alleged diversion of the working man and his family are held to satisfy a real need, they must be placed under such control, and charged with such accountability, as will assure safety. To do this, competent engineering certification of their adequacy in construction and in operation is the minimum requirement. This is the one course; could it be followed effectively and continuously, a reasonable assurance of safety might be attained. The other course is more radical but certain in its operation: wipe out the amusement devices entirely.

Under present conditions the public safety is constantly at risk while the various contraptions intended to give their patrons a new sensation continue to exist. Depending for their attraction on a spice of fictitious danger, they are so built and managed that this danger only too often becomes real. With the rarest exceptions they are incompetently designed, cheaply built, and operated by roustabout attendants. Only through a miracle can they be permanently safe; and sad experience shows that this particular miracle does not often happen. Both structural safety and operating safety are in question. Frequent competent engineering certification of the structures would reasonably assure the former. Safe operation is a more difficult problem, and nothing less than requiring skilled, licensed operators to be in charge of such devices at all times would do.

We have little faith that such drastic requirements could be enforced even in cities with efficient administrative machinery. And of course those amusement machines which are located outside of cities, as many of them are, would altogether escape control unless it were exercised by the state. Complete abolition of amusement machines is the only dependable guarantee against their dangers.

—*Engineering News-Record.*

Facts of Public Administration

Without facts, without a scientific record of experience, public administration cannot advance beyond its present primitive level. And we cannot have the necessary knowledge unless the facts of public administration are recorded in standardized form, and garnered into the granaries of knowledge and correlated and interpreted through disinterested research.

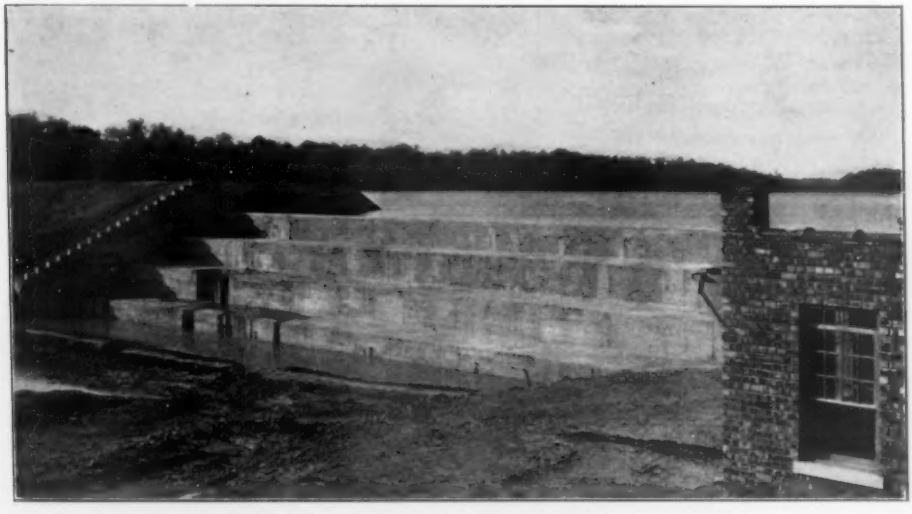
—LUTHER GULICK.

Moberly, Missouri, Enlarges Water-Supply

Chamber of Commerce Active in Securing Bond Issue and in Organizing Holding Company to Finance Part of Cost

By Gordon Hudelson
Moberly, Mo.

THREE hundred acres of swamp land, untillable and practically worthless, turned into a reservoir containing water enough to supply a city of 100,000 people, is the project which has just been completed at Moberly, Mo., by the firm of Fuller & Beard, engineers, of St. Louis, Mo. This system, representing an investment of $344,219.53, has been finally accepted by the city and the Wabash Railroad.



DAM, SPILLWAY AND PUMP-HOUSE AT SUGAR CREEK LAKE

Prior to the construction of this new water-works system, Moberly, a city of 13,000 people, had been hampered because of lack of water. The Wabash Railroad, which has its shops here, threatened to move the shops unless ample water could be supplied them. Only at certain hours in the day could water be used, and property owners were not allowed to water their lawns.

In view of all these facts, the Chamber of Commerce and the City Council started to work, and in January, 1920, A. H. Beard of the firm of Fuller & Beard was asked to come to Moberly and furnish a plan, report and estimate. This was done, and the plan was adopted in May, 1920. The original cost was approximately $351,000, and it was decided that a holding company or holding trust should be organized to finance half of the proposition by issuing bonds to be paid for by a lease arrangement out of the revenue from the plant. In turn, the city authorized a bond issue to cover the other half of the cost of the plant, and in August, 1920, a city election was held for the $175,000 bond issue and it carried by a ratio of 97 to 1. This made available $350,000 for

the new water-supply, half having been subscribed under the Moberly Utilities Trust, an express trust.

Forty bids were received on March 10, 1921. The contract was awarded to the Lynch-McDonald Construction Company of Moberly, covering the entire improvement, mostly for a flat sum price, which was $222,861.50. This included the entire project, excepting the land and the right of way necessary for the construction of the dam and creating a lake and laying of the pipe line and transmission line from the lake to the city.

Three hundred acres of land lying five miles northwest of the city was purchased by the city. This included about 175 acres of swamp land. Here a large reservoir was built, with a capacity of 350,000,000 gallons, the average depth being 10 feet and the greatest depth 22 feet. At Forest Park Lake, where the city had been receiving its water-supply, was a natural reservoir with a capacity of 150,000,000 gallons. This, combined with the new lake, makes a total of approximately 500,000,000 gallons available for the water-supply of the city.

The drainage area of the new Sugar Creek reservoir is more than 12 square miles. Rains which fell after the dam and spillway was constructed filled the reservoir, and during a slight drought which resulted in July the lake receded only 4 inches from the top of the spillway, practically assuring a continuous supply.

Construction of the Dam

The total length of the dam is approximately 1,100 feet. The reinforced concrete spillway measures 150 by 6 feet, giving a capacity of more than 3,000,000 gallons per day of 24 hours. The dam is so designed that it could be raised an additional 15 feet and create a lake of much larger area and approximately triple its present capacity. The total height of the dam above the bed of the creek is 28 feet, and the height of the spillway is 22 feet. Nearly 2,700 cubic yards of concrete was used in the construction of the dam and spillway, and it required 51,000 cubic yards of earth fill to construct the dam.

The approximate width of the dam at the base is 150 feet, and at the top, 47 feet. The entire upper slope of the dam is riprapped with 3,150 yards of rubble limestone. The core wall is 15 inches in thickness. The total cost of the dam was $107,500.

Slightly over 18,000 square feet of interlocking steel sheet piling was driven to a solid foundation below the surface and continued to the top of the dam with reinforced concrete core wall, which is intended to prevent any leakage that might be caused by passages of muskrats or crawfish.

The Pipe Line

The length of the electric transmission line from both reservoirs to the filter-plant is 5 miles. There are 3¼ miles of 14-inch wire-wound and coated wood stave pipe from a point 900 feet south of the Sugar Creek pump to the filter-plant. A 10-inch wood pipe line from the Forest Park reservoir to the filter-plant, which is located at the city limits, is 1⅓ miles long. A 14-inch cast iron water-main was laid from the pumping-station to the filter-plant and connected a large main on Reed Street, a distance of 1½ miles.

Pumping Equipment

The surface of Sugar Creek Lake, when level with the spillway, is 145 feet below the average surface of the city of Moberly. The surface at Forest Park Lake is 65 feet below the surface of Moberly.

At the filter-plant and pumping-station, which cost $12,900, is installed a 150,000-gallon steel water-tower, which is 26 feet high. The pumping-station consists of one pump at Forest Park Lake, driven by an automatic-controlled electric motor, and has a capacity of 1,000,000 gallons per day. The pumping-station at Sugar Creek, where the new reservoir is located, has two automatically operated electric motor-driven centrifugal pumps, one with a capacity of more than 600,000 gallons per day, and the other of 1,000,000 gallons per day. These pumps are for the purpose of pumping the water to the filtration plant.

There are installed at the main pumping-station at the filter-plant two high-duty domestic pumps, each with a capacity of 1,000,000 gallons per day, and one wash-water pump for furnishing wash water to the filters, with a capacity of 3,000,000 gallons per day, and one low-service pump for supplying lake water to the Wabash Railroad, with a capacity of 1,000,000 gallons

AERATOR, SETTLING-BASINS AND FILTERS, MOBERLY, MO.

per day. The pumping equipment cost approximately $7,579. A Venturi meter is used to measure water to large consumers, and also graphic recording pressure gages.

The Filter-Plant

The filter-plant and settling-basins, which represent an investment of $48,000, are constructed of reinforced concrete. The capacity of the rapid sand filter-plant is normally 2,000,000 gallons per day, with a maximum of 2,500,000 gallons per day. There are four filter-beds and two settling-basins and two clear-water storage reservoirs with a capacity of 300,000 gallons. The raw water passes through chemical mixing tanks, where it is treated with alum and lime, and then passes through aerators and settling-basins, thus eliminating all odors, and mixes the chemicals with the water prior to sedimentation. The water then passes through 4 feet of white sand, gravel and rate controllers, which regulates the flow of water to the clear-water basins below and thence into the city mains, and it is chlorinated at the end of the suction pipes of the city pumps.

There were four buildings erected in connection with this project, at a cost of $15,344: one chemical storage and feed house; one filter building, and two pump-stations, all of which were constructed of brick. The duplicate transmission line from the light plant to the main pumping-station was run on separate poles and cost $10,154.60.

This water-supply is expected to benefit the city greatly, and many factories and industries have been considering locating branch factories here since the completion of the new water-works project.

Much credit is given the Moberly Chamber of Commerce for the building of this water-works system, as it was through the efforts of that organization that the bonds were sold and the money procured for the undertaking.

Building the City for the Future

Make no little plans; they have no magic to stir men's blood and probably themselves will not be recognized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty.

—DANIEL H. BURNHAM.

Minneapolis Investigates Street Lighting Conditions

Committee of City Council Made Trip to Inspect Different Types of Lighting Systems

IN response to a considerable agitation on the part of different civic organizations in Minneapolis for a better and more economical system of street lighting, a Committee on Public Lighting was appointed by the City Council to visit other cities and investigate and report on the various types of street lighting systems, the amount of illumination and the cost of street lighting in these cities. The investigation included the cities of Milwaukee, Chicago, Detroit and Cleveland, as well as a visit to Nela Park, the Illuminating Engineering Laboratory of the National Electric Light Association, devoted exclusively to illumination laboratory work and the testing of lighting units. During the investigation, hundreds of illumination tests were made and data of every sort bearing on street lighting were gathered, with the result that the Committee made an interesting report with specific comparisons of the various systems.

The Milwaukee Lighting System

Milwaukee was the first city visited by the Committee. Previous to 1916, Milwaukee was probably one of the poorest-lighted cities of its class in the country. The lighting system then consisted of 271 gasoline lamps of 60 candle-power per unit, 3,157 gas lights of 60 candle-power each, 1,294 enclosed-arc lamps of 250 candle-power, 935 open-arc lamps of 400 candle-power, and 89 luminous arcs of 600 candle-power. In the outlying districts the lighting was very meager, many streets being entirely without lights. In 1916 the construction of a new lighting system of 9,500 lights was begun. The city was divided into districts of five different classes, each requiring a different intensity of illumination. The standard of average illumination set for each class was as follows: outskirts of city, 0.01-foot candles; residential section, 0.03-foot candles; outlying business districts, 0.06-foot candles; main traffic streets, 0.12-foot candles; main business streets, 0.50-foot candles. To reach these standards economically would require a very high-class lighting system, but in so far as the Committee was able to learn from its many tests on the system, there were very few cases where the illumination anywhere nearly approached the standard set, in spite of the fact that light was apparently very extravagantly used in some districts.

The Committee believed that the failure was due to the design of the lamp hood, which allows a very large portion of the light rays to be absorbed in the interior of the hood. Also, the accumulation of dust and small insects that find easy access to the interior of the reflector through the ventilating openings in the hood causes considerable loss of effective illumination. The dust coats not only the outside of the refractor, but also the inside, as well as the surface of the lamp globe, thereby preventing the escape of light from the fixture. In the case of lamps with a mounting height of 22½ feet or 30 feet, there seemed to be a great loss due to atmospheric absorption of the light rays before they reached the pavement. In the case of the so-called harp mounting, used largely in residential districts, the wide shadows cast by the heavy supporting arms which carry the lighting fixture were another considerable cause of loss of light.

The Minneapolis Committee reports that the type of reflector used so distributed the light as to give the street an appearance of even grayness, making it hard to see pedestrians or other objects on the roadway. The silhouette effect was lost almost entirely on account of the absence of brighter areas near the lamps. The system is quite complicated, and much equipment used in its construction is of a special design, making for high first cost, high maintenance cost, and difficulty of getting parts and making repairs, as well as the possibility of more numerous breakdowns than would be probable with standard, well-tried equipment and a simply arranged system.

In the main business district of Milwau-

kee, the lamps are mounted on 30-foot poles set opposite each other on the curb line. These poles are spaced about 180 feet apart, or six poles per block. Each pole carries two 1,000-candle-power lamps, or 12,000 candle-power per block. In the outlying business districts lamps are mounted on 22½-foot poles set opposite each other on the curb line and spaced 180 feet apart. Each pole carries one or two 600-candle-power lamps, or a total of 3,600 to 7,200 candle-power per block.

In the residential districts lamps are mounted on 15-foot poles with the harp mounting. In some districts these are set opposite each other, and in others are staggered. In either case they are spaced 120 feet apart along the streets. Where the staggered setting is used, a suspension light is generally hung at the street intersections. In the harp light one 250-candle-power lamp is used, and in the suspension light, one 400-candle-power lamp is used.

In traveling over the streets of Milwaukee at night, the Minneapolis Committee states, it was very noticeable that there was no apparent uniformity of lighting, height of mounting, type of fixture, size or number of lamps per pole. It was interesting to note the comparison of the lighting of Mitchell Street, an outlying business street, and that of the Boulevard in Washington Park in Milwaukee. On Mitchell Street, the lamp-posts are 22 feet high, set opposite and spaced 180 feet apart with two 600-candle-power lamps per post, using the standard Milwaukee type hood and refractor. The total candle-power per block is 7,200. Washington Park posts are 15 feet high, set staggering, 120 feet apart along the street, with one 250-candle-power lamp per post, using a globe-shaped refractor which allows the light rays to escape to the sky, as well as to the surroundings. No hood is used on this lamp. The total candle-power power per block is 1,000. The difference in candle-power between Mitchell Street and the Boulevard is over 7 to 1, although the illumination on the street from both sources is the same. This would seem to show an inefficiency in the standard Milwaukee type units and in the high mounting as used on Mitchell Street.

The Chicago Lighting System

In investigating the Chicago lighting system, the Committee found little of interest except that a definite maximum illumination, height of mounting, spacing and type of lighting units was fixed by ordinance. The 600-candle-power type of incandescent lamp is the standard adopted for general illumination. No ornamental lighting is done by the city, but if individuals wish, they are allowed to install and operate at their own expense ornamental lights that comply in all respects with the city ordinance as to the type of standard and fixture, provided the lamps are kept lighted continually. If lights are allowed to remain out for 30 days, they must be removed from the street at the owner's expense. The streets, except in a very few instances, are reported to be poorly lighted. This is due to the high mounting, dusty glassware, low-candle-power lights and wide spacing between lights. One noticeable feature was the absence of overhanging electric signs.

The Detroit Lighting System

The lighting system of Detroit is composed principally of luminous arc lamps and a very few incandescent lamps. Arc lamps are hung 18 feet above the curb from goose-neck standards. On the main business streets each pole carries two lamps. The spacing is 120 feet apart along the street, and lamps are set opposite each other on the curb line. On the more important outlying business streets the same rule is followed, except that only one lamp is hung from a pole. On other outlying business streets, units are staggered. On the business streets of Detroit, the Committee states, the illumination is very much better than on similar streets in any other city visited, except on the main business streets of Cleveland. In the principal residential districts, lamps were hung at the street intersections and at points in the middle of the block, while in outlying districts they were hung at the intersections only. The illumination was good in these districts.

Ornamental arc lights are used on the Grand Boulevard, mounted on 15-foot posts, set 120 feet apart, staggered. The illumination was very good.

The only objectionable features of the Detroit system were the glare when two lamps were mounted per pole with crystal clear glass globe with no provision made for diffusion of the light. The system as a whole is reported to be very economical and the results exceptionally good.

The Cleveland Lighting System

The Cleveland lighting system on downtown streets consists of what is known as the Cleveland post and lantern, a very dignified and beautiful fixture by day and by night. Lanterns are mounted 15 feet above the curb, except in parks, where the mounting height is 18 feet. On main business streets, each lantern has one 1,500-candle-power incandescent light, while on subsidiary business streets, one 1,000-candle-power lamp is used. The lights are set opposite each other on the curb line and spaced about 85 feet apart along the streets. In the parks and on boulevards the same lantern is used, with the same type of post, except that the lantern is hung from a bracket instead of being mounted on top of a post, as on the business streets. One 600-candle-power lamp is used in each park lantern. In residential districts 600-candle-power incandescent lamps are suspended at street intersections, 20 feet above the pavement.

By the proper application of refractors and diffusing glassware in Cleveland remarkable results were apparent. The illumination on the business streets is about the same as on the main business streets of Detroit, the noticeable difference being the absence of glare on the Cleveland streets in spite of the low mounting height and the high candle-power used. This difference is due to the slightly opalescent, rippled glass in the lanterns, which, while eliminating glare, gives a snap and sparkle to the light that is very pleasing to the eye and still allows the light rays to penetrate freely, giving splendid street illumination.

The type of fixture adapts itself not only to good street illumination, but also lights up the front of the buildings sufficiently to give an attractive appearance to the street. The lantern is dust- and bug-proof and, as the rippled glass surface of the glass is on the inside, there is but one smooth glass surface exposed to the dust. The type of refractor used is such that the light is well distributed away from the lamp, yet gives enough illumination thereby to allow a sufficient contrast so that objects on the roadway can be clearly seen against the slightly brighter areas near the lamps.

The Right to See Straight

OF the twenty-four million school children in the United States to-day, approximately ten million are laboring under a grave handicap—defective eyes—which could be mitigated to a great extent, if not corrected entirely, by the intelligent supervision of the state, and of the teachers of the country, through proper eye tests followed by appropriate care.

State laws require that children, within certain age limits, shall attend school for a given number of weeks per year, where they are compelled to carry on a stipulated amount of work. Yet very few states or communities make provision for suitable inspection and proper tests of the pupils' eyes to see that they are fitted to do the work required of them.

In rural communities particularly, very little provision is made for the care of children's eyes or for the proper lighting of the school rooms. In only 23.3 per cent of twelve hundred and sixty-two rural schools reporting from eighteen different states are eyes tested. Statistics from states where school children's eyes have been examined have shown that from 25 to 60 per cent have had defects needing correction. It was learned some years ago by examination that 65 per cent of several thousand school children in Philadelphia had defective vision of such degree as to warrant glasses. When we note that of the one hundred thousand school children of New York City public schools who failed to pass their examinations last year, fifty thousand were found to be suffering from eye defects, we can well understand why some rural communities report that a number of their pupils are "retarded."

In education it is necessary that the eyes not only have an abundance of things to see, but that they see them correctly. Furthermore, accuracy of vision has a vital relationship to conduct. Many a child striving for an education against this handicap of poor vision becomes not only stupid but rebellious, sometimes a truant—and a truant child is a potential criminal.

—Thomas D. Wood, M. D., in *The Survey*.

Informing the Autoist Regarding Local Traffic Ordinances

By George A. Carpenter
City Engineer, Pawtucket, R. I.

THE rapidly increasing use of automobiles is presenting a very difficult traffic problem to many municipal officials. Not only are the streets congested by a large number of moving automobiles and trucks, but the width of the streets and consequently the area available to traffic are being seriously reduced by the practice of parking automobiles in the highways. In some cities the resurfacing of additional streets with a smooth type of pavement and the designating of "one-way" streets will do much to relieve this congestion, but without further action upon the part of the city the parking evil will still remain.

The Ultimate Solution

It may be considered a step backward to draw comparison with the days of the horse-drawn vehicle, but such a comparison may be suggestive. In those days no person would have thought of making it a practice to drive daily to his place of business and leave his horse and carriage standing all day upon the street that it might be ready to serve his convenience at a moment's notice. Is such a practice any more necessary to-day? What would happen if every owner of an automobile claimed the privilege of riding to his office in his own car and parking it on the highway until ready to use it again? It seems to the writer that the ultimate and only satisfactory solution of this parking problem is to prohibit all parking on streets in business sections and to encourage the construction of commodious, easily accessible garages in the center of the city, where cars can be parked for short or long periods and thus be kept off the streets.

LIMITED PARKING PERMITTED WHERE THIS SIGN APPEARS IN PAWTUCKET

THIS DISK MEANS NO PARKING TO PAWTUCKET DRIVERS

As far as street congestion is concerned, almost any limitation of parking to sixty-, thirty- or even fifteen-minute periods amounts practically to continuous parking, for as soon as one car leaves its parking position another will be found ready to take its place. However, it is customary to suffer these conditions to exist until they become intolerable and then to make regulations correcting and modifying them. This seems to be the way in which the public must be educated, and in the meantime the automobilists must be informed of the purport of existing laws and ordinances.

There is no doubt that a very large

PAWTUCKET'S SIGNS STAND OUT WHERE DRIVERS CAN SEE THEM

majority of automobilists wish to obey the law and intend to do so if only they can know what are the law's demands. One important phase of the traffic problem, therefore, is to inform the autoist, and especially the stranger to the city, just what the local ordinances require. Of course, these ordinances can be printed and copies distributed by the police, but even then the stranger may be at a loss to determine just what he may or may not do in a particular street.

Street signs of some sort, then, are the only, final solution, and the simpler and more nearly uniform these can be made, the greater will be the satisfaction given and the results obtained.

The Proper Place for Traffic Signs

It has long been the writer's contention that traffic signs fastened to poles on the side of the street are difficult to observe and interpret, especially if it is necessary to read the directions thereon. The proper place for the autoist's line of vision, when driving through city traffic, is on the street, directly ahead, and he cannot safely let his line of vision wander over the poles on the side of the street in an effort to locate and read directions. For this reason it seems to the writer that, wherever it is possible to use it, the type of sign adopted by the Massachusetts State Highway Commission, and later used by the Rhode Island State Board of Roads, is the best method of conveying information to automobilists. This sign consists of broad, white marks or symbols painted on the road surface. These are right in the autoist's line of vision and he cannot help seeing them even at night. Then, if states and municipalities will agree on some simple and uniform marks or symbols denoting similar requirements, the problem of imparting necessary information to the autoist will be greatly simplified.

In congested traffic there will be many instances, of course, where information cannot be conveyed in this manner, and some other method must be adopted. Again, it should be emphasized that the main, fundamental requirements are simplicity and uniformity. Suppose, for example, it could be agreed that on all one-way streets all the poles on the right-hand side would be marked with a broad band (three or four feet wide) of some uniform color. If such a system could become general, the tourist in a strange city would know at once, if the poles on his right were banded in that manner, that he was in a one-way street and was headed in the right direction. If he found such a line of banded poles on his left, he would recognize immediately that he was in a one-way street but was headed in the wrong direction. He would not need a traffic officer to tell him of his mistake or to inform him what to do.

Pawtucket's Parking Signs

The same suggestion for simplicity and uniformity holds good with reference to parking signs. Pawtucket, R. I., has adopted a simple sign which is giving general satisfaction. As shown on page 341, simple signs with black letters convey all the necessary information with respect to the requirements of the city ordinances, and the addition of a metal disc painted red or white simplifies its interpretation from a distance. These red discs stand out at right angles to the face of the sign and can be

seen readily as one draws up to the curbing to park his car. A glance up or down the street will determine whether or not one is within the limits of the parking area, and as one learns the significance of the discs it is no longer necessary to consult and read the signs.

Two simple forms of discs have been adopted, a circular shape to indicate no parking, and a diamond shape to indicate parking for a limited period. Within the restricted district in this city parking is permitted for fifteen minutes only, so there is no necessity to letter the diamond discs. If varying time limits existed on different streets, white figures could be painted on the red discs to set forth that information. At the limit of the parking area the side of the disc facing the "no limit" area is painted white.

Thus the following is all one must remember: If, upon parking an auto, one looks up or down the street and sees circular red discs, he should know at once that he is in a "no parking" area and cannot leave his car. If he sees diamond-shaped red discs, he is within a parking area where he can leave his car for fifteen minutes. If the discs of either shape show a white face from where he observes them, he will know he is outside the parking limits and can leave his car as long as he desires.

Limitations of Municipal Power to Control Vehicular Traffic

By A. L. H. Street

In the case of Elie vs. Adams Express Company, 133 Northeastern Reporter, 243, an ordinance of the West Chicago Park Commissioners providing that no one should drive any vehicle across a boulevard at a street intersection without first stopping, nor cross at a speed exceeding six miles an hour, was held by the Illinois Supreme Court to be void. As a speed regulation, the ordinance is declared to conflict with an Illinois law forbidding municipal speed regulation of motor vehicles. And the Court finds that the measure cannot be sustained as a reasonable traffic regulation. The opinion says:

"The primary and paramount object in establishing streets and highways is for the purpose of public travel and the public and individual cannot be rightfully deprived of such use. This right to use the highways and streets for purposes of travel is not, however, an absolute and unqualified one. The right may be limited and controlled by the state, or by a municipality under its authority derived from the state, in the exercise of its police power, whenever necessary to provide for and promote the safety, peace, health, morals, and general welfare of the people, and is subject to such reasonable and impartial regulations adopted pursuant to this power as are calculated to secure to the general public the largest practical benefit from the enjoyment of the easement and to provide for their safety while using it. A municipal ordinance of a regulatory nature, in contravention of the natural rights of individuals, enacted under general charter powers, is not only required to be constitutional, but it must be reasonable as well. The court before which it is brought must be able to see that it will tend to promote the public health, morals, safety, or welfare, and that the means adopted are adapted to that end, and that it is impartial in operation, and not unduly oppressive upon individuals. In determining what is reasonable, much must depend upon the requirements of different localities, the density of population of the town in which the ordinance has been enacted, and the dangers and evils prevalent therein, and what would be reasonable in one place might be highly unreasonable in another. . . .

"To hold an ordinance of the character of the one in question valid as a regulation of traffic, the ordinance must show on its face that it is passed for the purpose of regulating traffic, and that the traffic conditions requiring regulation are the basis of the regulations imposed. If an ordinance requiring all motor vehicles to stop before crossing a boulevard at every point where such boulevard intersects a street is valid as a traffic regulation, then an ordinance requiring a motor vehicle to stop at every street intersection in the city is a valid traffic regulation. Such an ordinance would not regulate traffic, but would tend to congest traffic, and would not promote the safety or the welfare of the public. Ordinances designed to regulate traffic must therefore make a reasonable classification of the points within the jurisdiction of a municipality where the regulation shall be effective, and to make the regulation reasonable it might be necessary to designate by proper signs the points where the regulation is required and indicate thereon the regulation provided by the ordinance. For instance, at such intersections, where the municipal authorities find the traffic of such a character that it is necessary to require vehicles to come to a full stop before proceeding onto the street or boulevard, the point ought to be indicated by a 'Stop!' sign."

The Volunteer Fire Department and Its Problems

By L. B. Redford

Secretary, Volunteer Fire Department, Rupert, Idaho

A VOLUNTEER fire department is just as important to a small town as a paid department is to a large city. The members of a volunteer department must act and work in unison at all times and they must depend upon the knowledge of their chief and be just as obedient to his commands as the paid department. Failure to do so immediately causes a break in the line, and great damage is apt to result. Often a volunteer fireman takes too much authority upon himself and endangers property and lives.

In small towns where there is only a volunteer fire department, the men are really on duty 24 hours out of the day. They are not actually engaged, but stand ready to respond to any alarm of fire that may be given. They are working to a greater disadvantage than a regular or paid department. They not only leave their offices, work and homes when the alarm is sounded, but they may even run to the fire in their Sunday clothes.

A volunteer department must be organized just as efficiently as a paid department. Every member must have his station, and when he goes to a fire he must know just what he is going to do. The problems of a volunteer department are so numerous that it is almost impossible to cover all of them, but I will mention a few which I have noticed from time to time.

When a fire alarm is sounded, it usually brings out the whole population of the small town. The fire may be in the opposite direction from the fire station, but all the firemen make a run to the fire station to get out the equipment, and consequently the crowd follows close on their heels. As soon as the apparatus is out the mob changes its course and is again upon the heels of the firemen. Some of them often edge close to the apparatus and urge the firemen to travel faster. Some of the spectators take the chief's place at the head of the procession and get to the fire first, so that when the department finally arrives, the firemen must forget about the fire for a few moments and act in the capacity of traffic police to clear the people away from the plug so that a connection can be made. While the plugman is making his connection, the autos that were not so speedy arrive at the fire, and many stop within 10 feet of the plug and even pile up on the hose. By the time the plugman gets the hose clear, usually everybody is yelling for water. The plugman rushes back to his station and turns the water on and drops at the side of the plug, exhausted. Finally, the fire is out. As the people begin to return to their respective stations they have no regard for the hose lying across the road, and begin to trail across it, even though the plugman warns them not to do so.

Helpers That Hinder

The people of a small town do not stop to think that whenever they respond to an alarm of fire, they are hindering and delaying the work of the firemen. They do not stop to think of the time lost by the department in trying to keep out of the way of the spectators, but they do remember above all things to ridicule the members of the department whenever a delay is experienced in reaching the fire. They do not stop to realize that the firemen are working at a great disadvantage and for the safety of the citizens' own homes and business places.

Every town should have good fire ordinances, and the members of the department should put on a series of educational lectures so that every one may know what to do in case of fire. Every person who violates the ordinance should be arrested. This will quickly check further violations.

Another problem of the volunteer department is caused by the wilful deposit of combustible waste in alleys. In cities there is generally a health officer who visits the different business houses and makes in-

spections, or it may be the duty of the fire department to make the inspections. In small towns, the rule too frequently is to open the back door and throw all waste paper and rubbish into the alley, with the result that in a few days the alley is full of rubbish and is a great fire hazard.

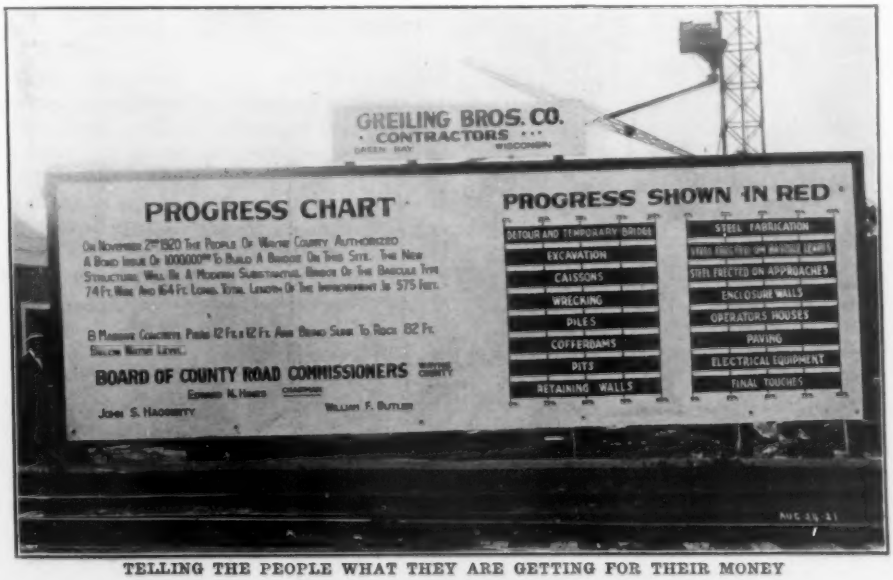
In small towns, there are usually more fire chiefs than there are in large cities. Every man on the street has a different view as to how he would have fought the fire had he been in the department. When one of these self-appointed chiefs is called upon to act at a fire, however, he does not know anything about the work and is afraid of getting his hands soiled and his feet wet. If every man in the town would get behind the fire department and give the members words of encouragement instead of abuse, volunteer fire departments would be much more efficient. Efficiency is what every town wants. We have one chief and don't need any more. We have a number of men in the department who can be depended upon, and we don't need any more volunteers; when they are needed, the chief will call upon them and press them into service.

There should be a state law that a fireman, whether he belongs to a paid or a volunteer department, shall be cared for or his family protected, in case of injury or death while in service. The volunteer fireman is working at a greater disadvantage than is the paid fireman, for he is not working for the city and does not come under the workmen's liability insurance. If he is injured, he has no recourse. If he is killed, he is buried and forgotten. Legislation is needed for the volunteer fireman as well as the paid fireman, and it is hoped that every fireman's organization will work faithfully to this end in every state.

Progress of County Bridge Construction Shown on Bulletin Board

Public Informed of Progress of Work by Chart on Full-sized Bill-Board

WHEN the Board of County Road Commissioners of Wayne County, Mich., began the construction of the Fort Street bascule bridge, the bond issue for which was passed in November, 1920, it was decided to keep the public informed of progress through the use of the large bulletin board illustrated herewith.



TELLING THE PEOPLE WHAT THEY ARE GETTING FOR THEIR MONEY

Some idea of the difficulties which were encountered in building this bridge and how they kept back rapid progress may be secured from the brief summary covering the construction of the bridge, from the Fifteenth Annual Report of the Board of Supervisors of Wayne County, Mich.:

"The passage of the bond issue in November, 1920, found us prepared to go ahead at this bridge. All preliminary investigations and plans were completed.

"In view of the importance to the public of properly maintaining traffic at this point, negotiations were immediately entered into with the Detroit United Railway to secure their permission for us to detour highway traffic over their right-of-way and their bridge, which is about 200 feet down-stream from the Fort Street crossing of Rouge River.

"As a result of these negotiations, we secured the right to use the D. U. R. property for our detour roadway, and their railway bridge itself has become our property to operate, maintain and remove at the completion of its use.

"Our permanent bridge when completed will provide car tracks which the D. U. R. has arranged to use, and in accordance with the agreements entered into, these tracks can also be used by any other street railway that wishes to operate cars across the bridge.

"During the winter the detour was made ready to receive a concrete road, and as soon as weather permitted in the spring the concrete roadway was poured. On May 12, the old Fort Street bridge was closed to traffic and the detour was put into operation. It became necessary immediately to take steps to regulate the vehicular traffic, which was inclined to make a speedway of this wide and commodious detour.

"Due to the cooperation of the village of Oakwood and the city of Detroit, the detour is well lighted. The resulting conditions are a great improvement over those existing in the past, and the users of this detour have voiced their appreciation by many favorable comments.

"During the past winter the Detroit City Gas Company proceeded with the installation of their tunnel under the Rouge River at the site of the new bridge, and the tunnel is now completed and in operation. This tunnel takes care of the gas lines and certain cables that were obstructions to the dredging of the river and which had to be removed from their old location before the foundations of our bridge could be built.

"Bids were received on April 26, and contract was awarded to Greiling Brothers Company, of Green Bay, Wis., to construct the foundation and general substructure of the new bridge for $334,714. Work on this contract is proceeding favorably at the present time . . . . . The depth of the foundation is, however, somewhat greater, as rock was located about 80 feet below water level.

"An especially difficult problem was presented at this bridge in the sinking of the pneumatic sub-pier caissons, because of the existing tunnels owned by the Detroit Edison Company and the Detroit City Gas Company. It became necessary to locate four of our caissons between the two tunnels, which are at a depth of from 40 to 50 feet below water-level. These four caissons were successfully sunk with less than 3 feet clearance from the Edison tunnel.

"If no untoward incidents occur in this foundation operation, it is probable that the new bridge will be opened to traffic by the end of 1922."

The cost of this project to date has been as follows:

FORT STREET BASCULE BRIDGE

Reconstruction of D. U. R. Bridge for a temporary bridge	$5,319.28
Building and maintaining concrete detour roadway	21,512.16
Construction of railroad sidings	9,690.26
Maintenance and operators' salaries for temporary bridge	5,195.95
Maintenance and operators' salaries for old Fort Street bridge before being discontinued	2,103.52
Foundations of new bascule	36,679.27
Leases, purchases, damages and rental of property	9,377.81
Engineering, blue-prints, etc.	22,658.16
Total Fort Street bascule bridge	$112,536.41

The progress chart on the Bulletin Board is kept up to date by painting red ribbons across each strip as the work progresses. These charts keep the public informed as to how the work is going on, and the chart can be seen by every machine or vehicle which approaches the bridge and is forced to detour. A great deal of favorable comment is made on the signs, and probably less unfavorable comment on the progress of the work is received because of the information given to the public at all times.

On the Calendar of Conventions

OCTOBER 1-6.—CLEVELAND, OHIO.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

OCTOBER 9-10.—CHICAGO, ILL.
International Association of Street Sanitation Officials. Annual conference. Secretary, A. M. Anderson, 37 West Van Buren Street, Chicago, Ill.

OCTOBER 9-12.—ATLANTIC CITY, N. J.
Playground and Recreation Association of America. Recreation congress. Secretary, H. S. Braucher, 1 Madison Avenue, New York, N. Y.

OCTOBER 16-19.—CLEVELAND, OHIO.
American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 370 Seventh Avenue, New York, N. Y.

OCTOBER 17-19.—PITTSBURG, KANS.
League of Kansas Municipalities. Annual convention. Secretary, John G. Stutz, University of Kansas, Lawrence, Kans.

OCTOBER 23-25.—DETROIT, MICH.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary, John E. Northway, Hamilton, Ohio.

NOVEMBER 23-25.—PHILADELPHIA, PA.
National Municipal League. Annual meeting. Secretary, H. W. Dodds, 261 Broadway, New York, N. Y.

Problems in the Reforestation of Watersheds---Part I

By George R. Taylor

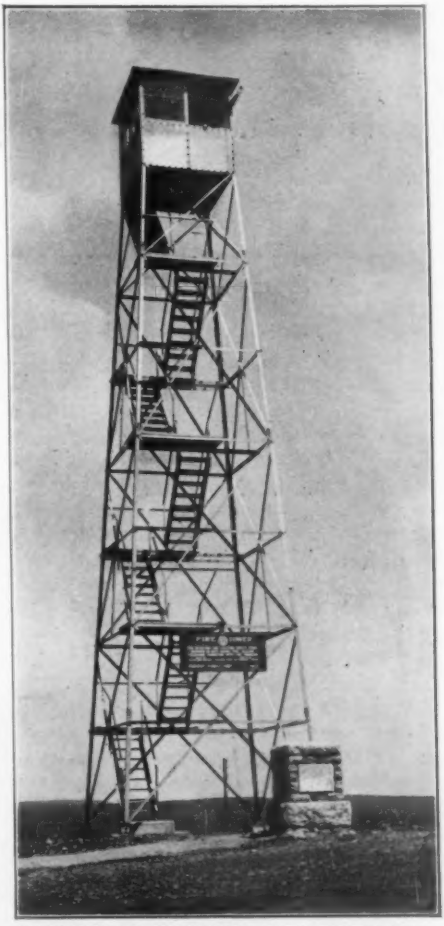
Chemist and Bacteriologist, Scranton Gas and Water Company, Scranton, Pa.

LITTLE can be expected of the private owner of non-tillable land in the way of reforestation, because few of us are willing to spend our time and money and labor in a cause whose benefits are to be reaped by the second and third generations. Only corporations having a continuity of existence sufficient to cover the 60 to 90 or 100 years which is necessary to grow virgin timber can be reasonably expected to make any real effort toward reforestation.

Among such corporations there are none to which forestry work should make a stronger appeal than our water-works systems, either those under private ownership or those municipally controlled. There are numerous reasons why water-works plants are particularly favorably situated for reforestation. They are frequently large owners of land which, naturally, has but few uses to which it can be put. They are interested in problems of the run-off from the catchment area, the peaks of flood and the depths of drouth, the turbidity of the streams, the sanitary quality of the water, all of which would be more or less favorably influenced were the watershed largely covered with forests. It being agreed, then, that water-works plants are vitally interested in reforestation, the problem remains of how to get it done.

Fire Protection Absolutely Necessary

Safety First is a pressing problem in these days in our own lives. Safety First, Last and Always, is the one imperative necessity in forest work and is spelled Fire Protection. The reason there are 5,000,000 acres in the "Great Pennsylvania Desert" is forest fire, which has turned our former woodlands into barren, desolate tracts. The first step in combating the forest fire evil is an efficient state forest fire system, with district fire wardens covering the entire state. Each district should have its fire towers and watchmen, and the district warden should have the authority and the money to secure men to fight forest fires. Such a state-wide system is imperatively needed if forest fire damage is to be reduced to a minimum. Supplementing state effort, there should be effective work done by the individual owner. In Pennsylvania the State Department began a thorough state-



FIRE TOWER ON SCRUB OAKS MOUNTAIN, ERECTED IN 1921

wide fight against forest fires in 1920. This year in the Scranton district there are a district warden and 150 fire wardens to cover the 2,264 miles.

Our own experience in fire protection covers 20 years of work, during 18 years of which we were absolutely alone in our efforts, receiving no help either from the state or from private owners. This fact must be borne in mind, as it has had much to do with the thoroughness of our preparations and the cost of our fire-fighting service. We hold 19,000 acres of land scattered over three counties in northeastern Pennsylvania. About 7,000 acres are in a solid tract 6 miles long and 2 wide adjoining the city of Scranton and in part within the city limits. This area is readily accessible from the city by various public roads and the 16 miles of our own macadam road which we maintain upon it. It is, in fact, a great public park through which on holidays and Sundays thousands of people pass. Because of these conditions, fires are numerous and we are forced to maintain a constant vigilant watch.

In the center of the tract we have a large farm where we keep a force of some 20 men who are variously employed in farm work, road maintenance, sawmill and forest work, general watershed care and work on the city system. A watchman is kept on the fire tower, and the men are always ready to drop their tools and rush to a reported fire. On Sundays and holidays they are kept in waiting reenforced by an automobile truck to carry them rapidly over the territory. The district is roughly bisected by a road running through the entire tract and is further cut up by our own road system. It is divided into smaller blocks by the fire and land lines, which total about 20 miles in length. The care of these fire lines, watching for fires, and fire fighting have meant an annual expenditure of about 60 cents per acre for the entire tract. This is very high, but has been rendered necessary because of the extreme fire hazard which we have to face. Even with all this care, 400 acres has been burned over in the past 10 years, or 6 per cent of the entire tract. In contrast to this, we have 3,000 acres on the head of the main stream in a thinly settled region where the only expense is to fight an occasional fire which starts from the railroad, or, again, a tract of about 1,000 acres in a thickly settled farming district where fires are practically unknown and nothing is spent on fire protection. We feel that the activity of the State Forestry Department will in the near future materially lessen these high costs as well as furnish more thorough protection.

Equipment for Fighting Forest Fires

In actual fire fighting, men are equipped with 4-gallon galvanized iron canteens, which are strapped to their backs, for carrying water, and also with chemical extinguishers, iron rakes, pails, etc. Our main reliance is placed on beating the fire out by the use of water and evergreen boughs. It will be understood that we are speaking of surface fires in the low brush which grows on the mountains, not of big timber fires. We rely on the fire lines for back firing as a last resort in case of high wind or rapid progress of the fire.

The maintenance of fire lines is a problem in itself. Probably a fire line should be looked upon merely as a line from which to back fire. From this standpoint it might be a line 2 feet wide from which all top soil has been removed to make the line absolutely devoid of vegetation. On the other hand, a 20-foot line is more satisfactory in many ways, and if a fire line is to be regarded as a line on which to hold a fire, a 20-foot line is more successful than a narrower line. In such a line the removal of the timber is followed by a growth of sprouts, weeds, and brush which is more dangerous than the original stand. Mowing and burning every fall will keep the fire line in fairly good shape, but is attended with some hazard and encourages the growth of weeds. One method of removing this second growth is by grubbing the line with pickaxes, removing the smaller sprouts by the roots and burning the line. This is expensive, as grubbing will cost from 30 to 40 cents a square yard; furthermore, it is not complete and repeated grubbings are necessary before the line becomes a barren waste.

We have experimented with chemicals in killing the vegetation on the fire lines. Most chemicals, however, as they are washed out of the soil by rain, seem to stimulate the growth of weeds. We have used gas tar on the fire lines with a considerable degree

A FIRE LINE TREATED WITH GAS TAR IN 1919 TO KEEP DOWN WEEDS AND BRUSH

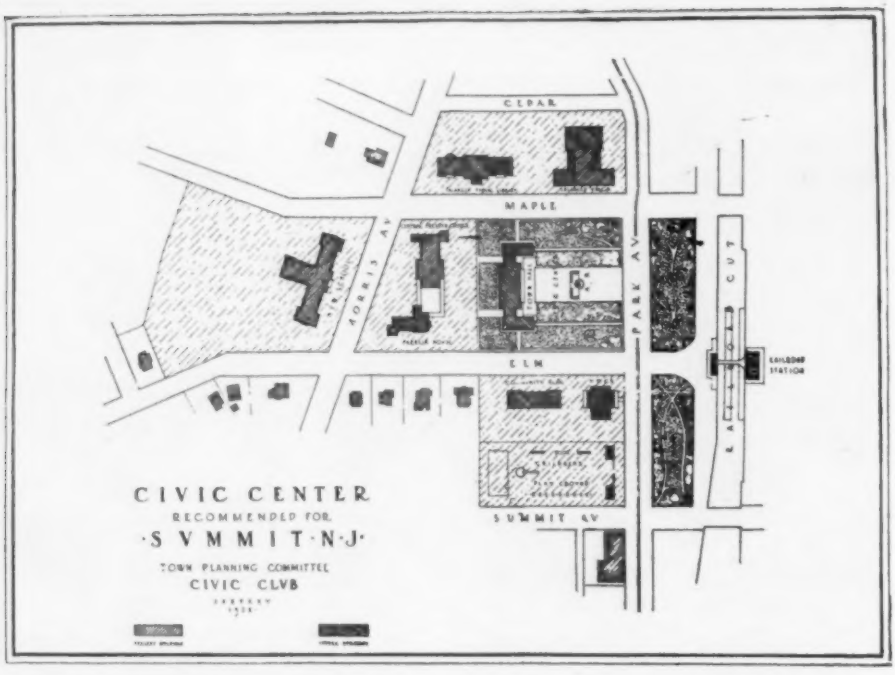
of success. Gas tar, a residue from the gas works, is a thin, sticky fluid, pours readily, is non-inflammable at ordinary forest fire temperatures, is not readily washed out of the soil by rains, and is very toxic to vegetation. We have applied this by hand, using sprinkling pots. It requires one to two gallons per square yard of fire line to be effective in killing vegetation. Just how long the tar will last we cannot say, but our lines after two or three summers are holding in good shape. We have not as yet put gas tar on a line where the only preparation had been to cut and burn the trees and brush. The quantity of tar would have to be increased, but we have no doubt that the results would be equally good, as the tar will kill sprouts of a year's growth. Gas tar is a by-product in water gas manufacture and can be sold for 5 cents per gallon. This is of tar of not more than 3 per cent water content. The tar as we have generally used it contains up to 25 per cent water, which aids in pouring it, but decreases its toxic effect. We figure that it costs us from 10 to 15 cents per square yard to apply gas tar so as to form an effective fire line.

Where coniferous timber is removed, there is left in the top layers of soil sufficient seed to insure natural regeneration of the forest. With hardwood the same result is effected by sprouts from the roots. The first fire on this tract destroys the seed and sprouts, successive fires burn out the top soil, until finally we have the barren tracts so common in the Pennsylvania mountains, where only fire cherry, birch and poplar grow. In such lands artificial regeneration is an absolute necessity. Further than that, if one wishes to control the type of tree growth, it can be done only by planting. Then, natural regeneration on lands which have been scarred by fire, even if very slightly, is extremely slow.

(To be concluded in the November issue)

Playgrounds as Character-Builders

On city playgrounds, your children will be given an opportunity to play, under trained play-leaders, at games which help them to develop both mind and body. If left to themselves, children are apt to spend their time at aimless play, which leads nowhere in particular. Yet play can be one of the biggest character-forming forces, if it is directed along the right lines. Children express their interests and powers in their games. If they are given a wide field for their invention, and their activity is guided, play becomes very important in the education of children. —Detroit Board of Education.



The Campaign for a Civic Center in Summit, N. J.

By Perry R. MacNeille

THE citizens of Summit, N. J., thirty miles out from New York, are justly proud of their city, for the works of man have not yet entirely destroyed its natural beauty. This beauty has been so counted upon by the citizens that, with exceptions so trivial that they are pitiable, no provision has been made for parks, playgrounds or other open spaces. Vacant property in the center of this city of 11,000 inhabitants has furnished, up to the present time, with its level forest floor and beautiful trees, a setting for a few of the semi-public buildings, such as the Library, the High School, the Presbyterian Church, and the Y. M. C. A. A portion of this vacant property, separated from the railroad station by a narrow little park, has been adapted to playground purposes.

So long had this property been vacant, that the citizens had grown to count upon it as a city asset, when one morning a steam shovel was moved to the corner directly opposite the Y. M. C. A. and the work of excavating for a commercial building, crowded up to the very sidewalk line, was vigorously pushed.

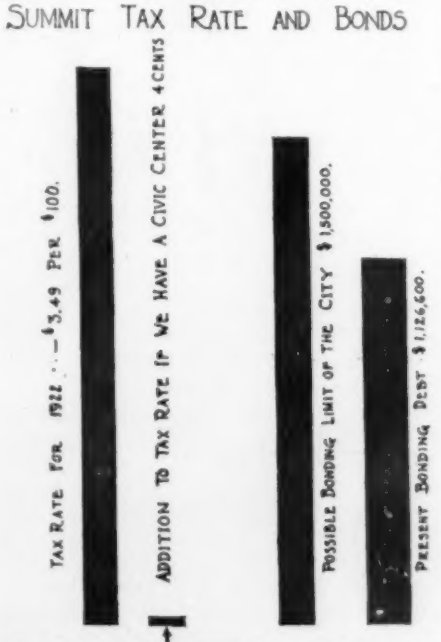
The Civic Club and the Town Improvement Society at once made formal protests to the City Council, and a committee of citizens waited upon the Council and poured into receptive ears their plea that the city should buy this and surrounding property. The Council then passed an ordinance for the purchase of the property, and the ordinance came up for a reading and public hearing.

The Council Chamber, usually so deserted, was on this occasion crowded to the doors and a strong opposition to the ordinance at once made itself evident. Strangely enough, those who usually were against public parks,

open spaces, civic centers, and the like—that is, those who had to pay the larger bulk of the taxes that would provide these things—were in favor of the purchase by the city, and those who would benefit most at little or no cost to themselves were opposed to the purchase. Many of the real estate men were opposed, the very men who in enlightened communities usually stand for these things, if only from selfish motives. The business men were more against it than for it, notwithstanding the fact that Summit is a city of commuters and anything that will make the city more attractive to live in will increase the population and hence the business done there. The Mayor and the City Council were unitedly and positively for the purchase, and both local newspapers united in their approval. Why this reversal of the too-frequent line-up on civic betterment?

The true reason is that men and women are seldom governed by their reason. They are swayed by their emotions. They are moved by what kindles their imagination.

Added to the forces of social, racial, religious, and political antagonism which were promptly trumped up, were the men, each with his smaller or larger following, who


SUMMIT TAX RATE AND BONDS
TAX RATE FOR 1921 ... $3.49 PER $100.
ADDITION TO TAX RATE IF WE HAVE A CIVIC CENTER 4 CENTS
POSSIBLE BONDING LIMIT OF THE CITY $1,500,000.
PRESENT BONDING DEBT $1,126,600.
CAN YOU SEE ME? I'M PRETTY SMALL BUT I'AM ALL THE CIVIC CENTER WILL COST

A STRONG ARGUMENT

are against everything. Their argument is always one of cost or of unworthy motives on the part of those who wish to do things, and in this instance this argument was voiced by a gifted orator and an energetic salesman.

The opponents first circulated a petition with no counter-activity by those in favor. Some non-voters and non-taxpayers signed it, and in many instances several signatures were in the same handwriting, but the petition was formidable and had its weight:

"Do you want your taxes raised out of sight? If not, sign this petition.

"Do you want your rent raised? If not, sign this petition."

On a $5,000 house the raise in rent would have to be 10 cents a month, but the signers thought it would be as many dollars.

The petition did not shake the decision of the Mayor and Council to pass the ordinance, however, so the opponents then got a signed protest from the payers of 10 per cent of the taxes, and by law this threw the questions to a public referendum and election, which was called for May 9, 1922.

This gave about ten weeks for the campaign. Some thought the time was too short to educate the public to a real desire for the civic center. But everybody's job was nobody's job, and weeks slipped by with nothing done.

Then the president of the Civic Club and one of its directors, a recognized leader among the Republicans, and a former councilman active in public affairs, had a conference and together selected members for a citizens' committee, of which C. H. Jagels was elected chairman.

A carefully worded, half-joking, half-earnest letter was sent to a selected list of public-spirited men of means, asking for funds. Page space was engaged in both local papers for each issue (weekly) until the end of the campaign. Permission was gained from the Mayor for a public mass meeting on the Depot Plaza Saturday night before election, and a publicity committee was appointed to gather general and special information for publicity use.

Next, a survey was made of the opposing forces: who led the different factions; what prominent and influential men were against it, and why.

In every controversy there are the assigned reasons for disagreement, and the

real reasons. It is the latter that must be discovered. In this instance they had nothing whatever to do with a civic center. The civic center was merely the rallying point for the dissatisfaction of years back.

The leaders of the various racial, religious and business groups had to be seen by the right people, and the right people in each instance were those who could approach them in a spirit of friendliness, argue the avowed objections on their merits, and try to remove the real objections.

The backbone of the campaign, however, was the house-to-house canvass. Captains were appointed for the men and for the women in each ward; they selected their district lieutenants, and these, in turn, selected the lieutenants. Each lieutenant was given a card of suitable size to carry in the pocket, with space for ten signatures and addresses. Above the space for signatures was printed:

EXPRESSIONS OF APPROVAL
of the
PROPOSED CIVIC CENTER

South of Park Avenue, opposite the Railroad Station and between Maple and Elm Streets

I am in favor of the purchase at this time of the proposed Civic Center by the city of Summit for the following reasons:

1. Summit needs a Civic Center in an accessible location around which future public buildings can be grouped.
2. Summit needs an open space in or near the congested center of the city.
3. More people pass the site of the proposed Civic Center and would therefore find it more convenient and would get more pleasure from viewing it than on any other available site.
4. It is the only site that could be seen by strangers immediately on their arrival—when first and lasting impressions are made and judgment of the city formed.
5. More public buildings are around the proposed Civic Center than anywhere else in the city.
6. The land can be purchased now at a low price and at a very great saving over what it will cost even a few years hence.
7. This is the last chance to purchase a site for a Civic Center at a low cost. If not purchased now, buildings already planned will be built upon it.

NAME ADDRESS

.....

On a list of all the voters the names of those who were favorable were checked off as the cards were handed in by the lieutenants. The complete list was used for mailing propaganda, but the checked names only were used for mailing postal cards reminding people to register and later reminding them to vote. On election day printed slips were given to commuters at the station, reminding them to vote.

The propaganda consisted of full-page newspaper advertisements, a printed article of high literary merit and academic presentation, circular letters, graphic charts, and a proposed plan, artistically rendered, for the development of the civic center. The charts and plan were displayed in store windows, and the printed article was sent to a selected mailing list comprising the business men, the professional men and commuters. The circular letters dealt with the local situation in certain parts of the city and were sent only to those interested. The reprints of the newspaper advertisements were sent to all the voters.

Wherever the desired effect could be produced without mentioning names, this was done. For instance, one wealthy man was against the purchase because it would raise his taxes. He is a great golf player. His taxes were looked up and it was found that the extra cost to him was the equivalent of the cost of seven golf balls. This fact was mentioned in speeches, but the man's name was not mentioned.

Some landlords threatened to raise rents if the project went through. Figures were published in answer to this, with an accompanying argument headed, "Taking the Bunk out of Buncombe." The exact increases in taxes or rent due to the purchase of the civic center were given. The rent of a $5,000 house would have to be increased 10 cents a month. Property assessed at $10,000 would pay $4 a year more taxes. It was not sufficient to say that the added cost was 4 cents per $100, because even educated people make absurd mistakes in placing the decimal point in their calculations. One man whose property is assessed at $12,500 figured he would have to pay $50 a year more taxes, whereas in reality he would have to pay only $5 more.

Election day came, and the vote was disappointingly light in the morning, but when the commuters returned from New York, it came in stronger than had been hoped, a larger vote being polled at this special election than at the previous regular election. The vote was: for a civic center, 1,609; against a civic center, 991. When the results were known, the band employed by the opposition to sound their victory packed up their silent instruments and went home.

It was a great day for Summit.

Chamber of Commerce Activities in Public Affairs

Have You Contributed to This Department Recently?

An interesting letter from G. E. Comer, Secretary of the Henderson Chamber of Commerce, Henderson, N. C., laments the fact that Southern secretaries are not more often represented in this department. We have replied stating that we are always delighted to receive contributions for the department and that the space allotted to it will depend upon the number and character of such items. May we make the invitation general? This department is essentially for the secretaries, and we hope that they will find it of sufficient interest each month to make a regular habit of reading it and sending in the news of their best work along public lines.

Seattle's Great Pageant

SEATTLE, WASH.—Seattle citizens regard as a civic undertaking the annual production of "The Wayfarer," heralded as the Passion Play of America, and 6,000 men and women volunteered their services for the 1922 production held at the University stadium, July 24 to 29. The stadium seats 30,000 people. The profits from the performances go to pay off the bonds issued to construct the stadium, and no one connected with the performance, other than those engaged in the mechanical side of the production, received pay.

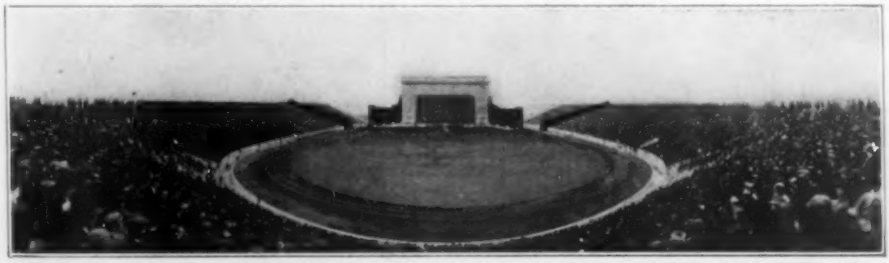
"The Wayfarer" is an inspired religious drama, written by Dr. James E. Crowther for the Methodist Centenary held in Columbus, Ohio, in 1919. It was produced for three weeks in Madison Square Garden, New York, where several critics heralded it as the greatest dramatic spectacle of the age. The scenery and electrical effects, valued at $200,000, were moved to Seattle, and the pageant was produced in the stadium on a scale far surpassing the Columbus and New York presentations.

In the costumed chorus there were 3,000 trained singers, and besides these, 3,000 other participants were seen in the episodes and the March of Nations, the most dramatic of many stirring scenes. Striking light effects, gorgeous costumes and scenery—some pieces of which were the largest ever constructed—assisted in spreading the fame of "The Wayfarer," which was produced for ten consecutive nights, with the stadium oversold the last two nights. This year transcontinental railroads recognized "The Wayfarer" as a national event.

HAROLD CRARY,
Director of Publicity, Seattle Chamber of Commerce.

Celebrates Concrete Road Opening

KANKAKEE, ILL.—A Mardi Gras celebration commemorated the completion of the first concrete highway leading into the



STADIUM OF THE UNIVERSITY OF WASHINGTON, SEATTLE, WHERE 6,000 MEN AND WOMEN PRODUCE "THE WAYFARER"—AN ANNUAL CIVIC UNDERTAKING

city of Kankakee. This road connects the city with the Dixie Highway. The celebration, which brought together the rural and urban populace in a great frolic, was an unqualified success. The cost, amounting to $6,500, was largely financed through the sale of votes at 5 cents each by contestants for the honor of Queen of the Mardi Gras. The celebration opened with a giant parade in the morning, in which all the civic and fraternal organizations, manufacturers, auto dealers and merchants participated. In the evening there was a big Mardi Gras parade, followed by the coronation ball, at which many prizes were awarded and real merriment was afforded the 5,000 who attended.

J. N. SLETTEN,
Secretary, Chamber of Commerce.

Chamber's Action Assures Airport for Boston

BOSTON, MASS.—The campaign for a Boston airport, conducted during the past year by the Boston Chamber of Commerce, has just been brought to a successful conclusion. Work on the field has been started, and by the middle of December Boston will have what has been classed by aviation experts as the best located airplane landing field in any city on the Atlantic Coast, if not in the entire United States.

For years it had been felt that until such a field was constructed there was little chance for the development of aviation in New England. It was not, however, until the fall of 1921 that any really active campaign for a field was started.

At this time the Chamber's Committee on Post Office and Postal Facilities, which had been interested in the field primarily from the air mail side, recommended that the Chamber urge the construction of a field, but on the basis of the general value of aviation to the city, from the commercial, the military, and the air mail standpoints.

It was found that there was only one location in the city that would be practical as a flying field and yet be near the heart of the city. This was on land in East Boston recently filled by the state. As a flying

AIRPLANE VIEW OF BOSTON'S NEW AIRPORT

field it would be ideal, for it had water on three sides, and no buildings for half a mile on the fourth, and provided plenty of room for expansion. Since the field was on state land and also would be of benefit to the entire Commonwealth, it was felt by the Chamber that it should be a state proposition. The army air service agreed to lease the field for operation and control after it was prepared.

The Boston Chamber of Commerce introduced a bill in the State Legislature providing for the construction of the field, and for its leasing to the Federal Government for operation and control, on the condition that commercial flyers be allowed full use of the field. An appropriation of $35,000 was carried in the bill.

After a long fight the bill passed with an amendment providing that any difference between the $35,000 appropriated and the estimated cost must be raised by parties other than the Commonwealth before work could be started. It also provided that out of these funds two hangars must be erected for the use of the Massachusetts National Guard Air Squadron.

When the bids were opened, they were found to exceed the appropriation by $13,870, which the Chamber undertook to raise. In raising the fund, the Chamber placed great emphasis on publicity. Every day news stories were sent to the papers telling the progress of the fund; giving endorsements of the fund by prominent persons, such as the local Postmaster, the President of the Chamber, the Postmaster-General, the Commanding General of the 1st Corps Area, the Chief of Air Service, and the Secretary of War; or telling something interesting and timely about aviation that could be tied up with a Boston field.

Letters were sent to a selected list of about six hundred business men of the city, and were followed up by personal calls by Minute Men of the Chamber (an organization formed to handle special work like this) and by members of the Aero Club of Massachusetts, the Archie Club, and the National Guard Air Squadron.

The city of Boston agreed to put in the water-supply for the field at a cost of approximately $4,000. The lowest bidder had specified that his figures would hold only until August 15. On August 10 the fund was still over $3,500 short. That evening a letter was sent by President Snyder to the entire membership of the Chamber—approximately 7,500. Immediately there was a heavy response. The campaign of publicity had acquainted the Chamber members with the importance of the field, and this last-minute appeal brought in over 350 individual subscriptions, most of which were for sums ranging from $1 to $25, fully showing that the subject was one of general interest. By noon on August 15 the fund was oversubscribed by approximately $1,200, and subscriptions are still coming in.

The Chamber of Commerce feels that, in addition to guaranteeing that Boston shall have a field, the work of the past year, and particularly the few weeks' drive for the fund, has been of inestimable value to aviation in New England in that it has aroused a more general interest in this industry, and has acquainted the public with the fact that aviation is not wholly a dangerous and costly sport, but a reasonably safe and practical means of commercial communication, which will develop as fast as adequate landing-field facilities are provided.

THEODORE G. HOLCOMB,
Secretary, Boston Chamber of Commerce.

A New Tourist Camp at Pierre

PIERRE, S. DAK.—In accord with the growing interest in tourists' camps, the city of Pierre, S. Dak., is planning to provide such accommodation for visitors. The Kiwanis Club of the city is responsible for the camp, and has let the contract for its construction in the local park.

The building is to be of bungalow style, costing unfurnished about $1,600. Exposed rafters and a large screened-in porch are additional attractions of ornamental and practical nature. The building will be 24 by 32 feet, and the porch 24 by 10 feet. A well-furnished rest room, 16 by 16 feet, is to be part of the interior arrangement.

The 8 by 16-foot kitchen will be equipped with laundry tubs, a sink, water, gas, and wood-burning stoves for cooking. Toilet facilities will be ample, including two shower-baths with hot and cold water. The building will be lighted throughout with electricity. The camping-grounds in the rear of the house will provide a large space for the sleeping tents of the tourists, and will be electrically lighted.

ELMER B. WHITCOMB,
Secretary, Pierre Kiwanis Club.

Lakeland Votes for Manager Plan

LAKELAND, FLA.—Since the inception of the idea of a new city charter for Lakeland, the Chamber of Commerce has had its fingers, unofficially at least, in the pie.

The charter board of nine men elected last March consisted of the best men the city had to offer, and, incidentally, all of them were members of the Chamber of Commerce. The President of the Chamber was the Secretary of the Charter Board. The Chamber immediately offered its offices as a meeting-place for the Charter Board, and the Board availed itself of these quarters when it did not sit in the City Hall.

As finally passed by the Board, the new city charter was built around the city manager form of municipal government, as being the most efficient and businesslike. It also gave the city much wider powers and provided for a city planning commission. On these merits it came up for acceptance or rejection on August first.

The Chamber of Commerce was, of course, actively supporting the new charter. It had had a good deal of influence in the writing of the charter, and it thoroughly believed that it was for the best interest of Lakeland to have the charter passed. All its influence was thrown behind it. All its members got out and worked for it, talked, argued, pleaded, and finally convinced. The fight centered, of course, about the commission-manager form.

The Chamber of Commerce sent out a questionnaire to a number of the civic organizations of the cities having the commission-manager form, asking them if they preferred that form to their old one, if they would vote for it again, and what were the outstanding results of the commission-manager form. The replies were overwhelmingly in favor of having a city manager. Hardly a word was lifted in protest, and where there was any opposition, it was due to some local difficulty, limited authority, or poor commissioners or manager, rather than any inherent defect in the commission-manager form.

Armed with these data and an astonishing list of accomplished results, the Charter Board, backed by the Chamber, waged its fight for the new charter, on the street, in the newspapers, and among the organizations which the new charter gave the city an opportunity to help. The campaign wound up with a big mass meeting in the park the night before the election.

It was a close fight. There are still some politicians who are rubbing their heads and wondering where their political guessing-machines went astray. But the majority of Lakeland really felt that the time was ripe for a change, and that the charter's provisions were good, and workable. The result was that the charter passed, by a majority of 27 votes.

After the actual passing of the charter the Chamber used its influence toward getting the finest type of men to run as city commissioners, and urging on the people the importance of good men for this office, though as a Chamber it takes no active part in politics. It also engaged in collecting such data as may be useful to the new commissioners, who were elected on September 4 and took office three days later, in selecting a city manager from all those available for the office.

The three commissioners elected are among the finest business men of the city, and their selection augurs well for the success of the new charter and the city manager form of government. They had but little opposition, there being only six men in the field. Those elected received respectively 629, 608, and 559 votes. The highest vote received by any one of those defeated was only 239. A total vote of 868 was cast, which is an unusually heavy vote for this city on such an issue.

MARY BARSTOW,
Assistant Secretary, Lakeland Chamber of Commerce.

Homestead Makes Good Use of a Dump

HOMESTEAD, PA.—In the upper section of Homestead last summer, in the midst of an attractive recently developed part of the town, there lay two unsightly lots which had served the purposes of a dumping-ground for some time previous. These lots, 110 x 150 and 110 x 250, had been purchased by the School Board years ago as prospective school sites. The Chamber of Commerce Committee succeeded in having the lots developed for playground purposes.

Teams totaling 30 workers solicited a selected list of about 200 names and collected over $600. A local contractor furnished free dirt, with the result that the dumps were filled and leveled off at a cost

HAPPY YOUNGSTERS AT HOMESTEAD'S NEW WADING POOL

of only about $300 for labor. After the first summer's work, the ground was available for baseball, and ice-skating was made possible in winter by flooding.

This summer we equipped the grounds with large swings, baby swings, seesaws, a giant slide, a baby slide, a sand house, a drinking fountain, volley ball goal posts, basket-ball goal posts, twelve park benches, and a concrete wading pool. Our Playground Committee solicited local business houses, which pledged all this equipment, worth over $1,500, either in cash or materials. The Homestead School Board also furnished one kindergarten teacher.

We conducted a Mardi Gras and Opening Celebration to acquaint the people with our work and raise money for supervisional expenses; 10,000 people attended this affair. As a result, we now have a wading pool to which children come from all quarters. Neighbors are enthusiastic over the change from an unsightly dump which smelled of defunct cats and dogs, to an attractive spot which protects the children from the whizzing autos that pass through the neighborhood.

BERNARD J. WEIS,
Managing Secretary, Homestead District Chamber of Commerce.

Work of Social Service and County Overseer of the Poor Consolidated

BURLINGTON, IOWA.—For a number of years the social service work and that of the county overseer of the poor were handled separately in Burlington, with a secretary and an office force in charge of each line of work. Experience in Ottumwa, in Marshall County, in Marshalltown, in Oskaloosa, and in Mahaska County, all pointed to the wisdom of correlating and consolidating these two enterprises. Accordingly, it was suggested to the Social Service Board, prior to a financial drive, that the consolidation be attempted.

We found that it was rather difficult to get the County Board to agree, for it meant the elimination of the official overseer of the poor. A number of the prominent social service workers, who are also members of the Board of Directors of the Greater Burlington Association, after careful investigation came to the conclusion that the suggestion should be adopted, the two activities consolidated, and a trained social service worker placed in charge so that many county paupers might be taught to become self-supporting.

When death removed the county overseer of the poor, public sentiment for consolidation had already been created, and when the Association called a joint meeting of the Social Service Board and the County Board, the two together worked out a plan of consolidating the charities. They are now under the head of a competent, trained leader, who, we believe, will solve a real community problem. With financial aid from the county in helping to maintain the office and the secretary, we hope to improve conditions and reduce the budget for the county.

C. W. BOND,
Secretary-Treasurer, Greater Burlington Association.

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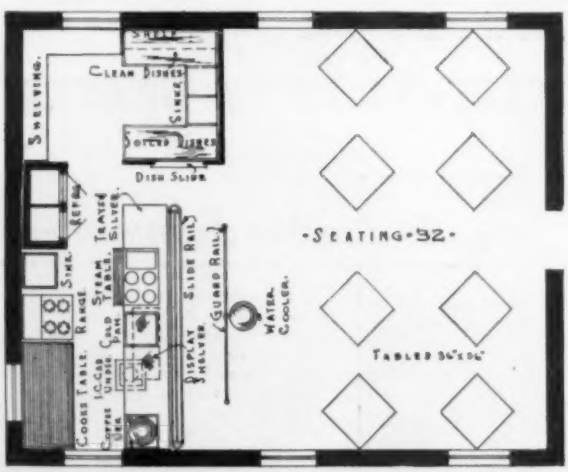
Designing and Equipping the School Cafeteria---Part I

By A. E. Merrill

ONE of the fundamental principles of education is the building of sound bodies to house and stimulate growing minds. In a special treatise on the subject a leading authority says: "The hot lunch means that the child will be better nourished. Better nourished, he can do better school work, for what is good for the body is good for the brain." For this reason the school cafeteria is considered an integral factor in promoting scholarship and is of prime importance in the planning of every school. Educators everywhere realize its importance, and practically no school to-day is planned or built without some consideration for feeding the students. However, where first the cry was for a lunch room at any cost, the demand now is for school cafeterias more durable, more economical and more efficient.

The percentage of students who immediately patronize the cafeteria varies. It is always well to plan for a maximum demand, and a safe percentage for high schools would be about 50 per cent of the total enrollment. In other words, a building housing 1,000 students should have restaurant facilities for at least 500. The next consideration is whether those desiring meals must all be fed at once, or whether it is possible to have them come in two or more shifts, 30 minutes apart. It must be remembered that the most expensive operation in cafeteria service is where all must be handled at one time. This duplicates the counter service and doubles the help needed back of the counter. Therefore, if the number runs over that which one counter will serve, shifts should be arranged if possible. The more times a service can be used, the more economical will be the operation of the restaurant, and no school dining-room should be made large enough to accommodate all at one sitting if it is in any way possible to divide them into two or more shifts. Two shifts can easily be made by allowing the boys to eat first and the girls later, or vice versa; another method is to determine the shifts according to classes.

The average complete single counter service for maximum capacity should be from 25 to 35 feet in length and will serve about 200 people every 15 or 20 minutes. As that is also the average amount of time taken at the table, a seating capacity of 200 or more is necessary. Tables can be crowded a little more than is practical in a public restaurant, and the kitchen can be made more compact. Such a single-service counter requires a minimum of 15 square feet per seat for dining-room and kitchen, as compared with 20 square feet in the commercial cafeteria, or a minimum of 3,000 square feet total. If storerooms must be included, another 1,000 square feet is



LAYOUT OF SCHOOL CAFETERIA WITH SEATING CAPACITY OF THIRTY-TWO

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advisable. It will be seen that if a single-service cafeteria were used continuously for one hour, its capacity would be approximately 800 people. This is never possible, and about one-half this number, or 400, should be taken as the basis to determine the number of services and thus decide the necessary space allotment.

A typical single service unit of maximum capacity to be used in schools of 400 or over where the estimated capacity required will be about 200 meals, uses a room about 40 by 100 feet, assuming that all storage of supplies must be included in this space, but that locker and wash rooms for the restaurant help will be provided in some other part of the building. The illustration shows a seating capacity of 224, although 200 seats are all that are absolutely necessary.

The Counters

The first and most important consideration is the counter. In this installation is shown a counter 30 feet in length, 36 inches high and 30 inches wide, divided as follows: 5 feet for trays, napkins and silver; 3 feet for bread; 7 feet for steam table; 8 feet for pastry and desserts; 5 feet for milk and cream; and 2 feet for hot drink service. The counter should be placed directly in front of the partition which separates the dining-room from the kitchen, with the rear of the counter 42 inches away from this wall.

No equipment should be placed on the dining-room side of this partition back of the counter, least of all the battery of urns. Urns are sometimes omitted when boards decide not to offer coffee as part of the menu, but they are generally included in all best grade school installations. When properly located, the urns are at the end of the counter about 2 feet away and at right angles to it. Although no preparation equipment is permissible on the back wall, there should be at least two service slides conveniently located and opening above the service tables for salads and pastry on the kitchen side of this wall. There also should be double doors for bringing replenishments to the steam table.

Much better and more rapid service can be obtained by this arrangement than by that originally used, where the counters were set further away from the kitchen wall or even in another part of the room, with service stations provided directly back of the counter. The idea originally was to have each counter girl prepare as well as serve the various items at her station. This always resulted in delays, and it is far better to separate all preparation, even to the cutting of cakes and pies, and have those at the counter give their entire attention to keeping the line in front of the counter in motion.

Above all things, the school cafeteria must be a model as far as sanitation is concerned, and this has led to an almost uniform selection of opalite glass, either black or white, for the counter top. The framework of the counter should be metal and provided with two metal shelves at the rear. One is given a choice both as to expenditure and appearance of the facing panels. Panels of glass are most frequent, but porcelained steel, galvanized sheet iron enameled, and marble are also common.

Only where counters of a temporary nature are erected should any consideration be given to a wooden cafeteria counter. In the first place, alternate heated and iced fixtures are necessary, and there was never any wood paneling made that could withstand the daily variation in humidity which such a condition creates. Warping and buckling are bound to occur, no matter how carefully each fixture is insulated from the wooden framework. In the second place, the warm section in back of the steam tables and dish-heaters attracts vermin and forms for them an ideal nesting-place which can be reached only by removal of the heated fixtures for cleaning. Metal counters are practically free from this nuisance.

Just as in school desks and furniture, the heavy base has been discarded and sanitary legs substituted, so counters are now designed to rest on 6-inch white porcelain feet. This 6-inch clearance gives an opportunity for the floor beneath the counter to be thoroughly flushed out after every meal, and any particles of food or accumulations of dust and dirt removed. It also prevents employees from using the space below the bottom shelf to dispose of old rags or any other refuse which they are too lazy to carry to the refuse container. Still another argument for the sanitary construction is the open plumbing and steam lines which it facilitates. Architects often carry this still further by providing a channel beneath the counter to carry all pipe work. This is fitted with removable metal covers, to give

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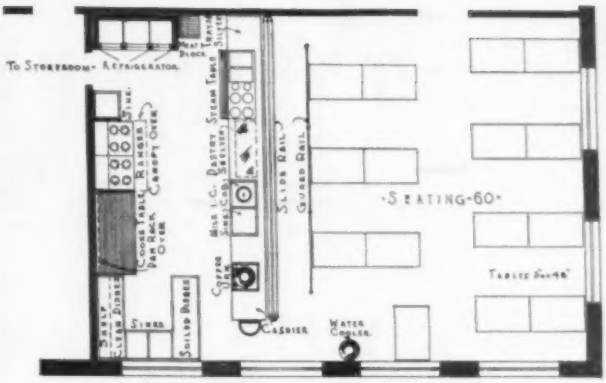
Fixtures

The next consideration is the construction of the various fixtures which go in the counter. These will be described in the order in which they appear, starting with the tray, napkin and silver stand, and ending with the battery of urns.



PLAN OF CAFETERIA SEATING SIXTY

The tray, napkin and silver stand is usually built as a part of the counter and continuous with it. If space does not permit this, it may be located at the side approach to the counter and set at right angles to it. This fixture should be 4 to 5 feet in length and have open shelves to accommodate stacks of trays below as well as on top. The top is of 1-inch white glass with a set of silver bins at the front. These are made of heavy metal covered with nickel-silver and provided with rounded bottoms to facilitate cleaning.

To speed operation, two teaspoons, a knife and a fork are usually wrapped in an 18 by 18-inch butcher linen napkin, and the silver bins are filled with these rolls. This prevents the handling of the silver by anyone other than the child who is to use it. The regulation size of the silver box is 38 by 14 inches, with four compartments. The front is formed to coincide with the thickness of the counter top, and the other four edges are flanged 1 inch to form the union between it and the glass top. This construction applies to all properly designed cafeteria fixtures and serves both to make a neat-appearing job and also to prevent crevices which fill with dirt and refuse.

Between the tray stand and the steam table there should be left about 3 feet to be used for bread and rolls. The steam table should be 7 feet in length, with one opening for a 12 by 20-inch soup tureen holding about 8 gallons, two openings 12 by 20 inches for meat pans, two for 5-inch gray jars, and six for 9-inch vegetable jars. The top of the water pan is made of nickel-silver stretched over heavy steel and resting upon a water pan of 32-ounce cold-rolled copper tinned on the inside. The pan is flanged on the ends and one long side, and the other side is provided with a 6-inch maple carving board, making the over-all width 29 inches.

This water pan rests upon a galvanized dish-heater, 36 inches high, with a single shelf without doors, to be heated by gas or steam. This rests upon adjustable iron legs, and the entire fixture is placed in a cut-out in the counter of suitable size. By this construction and by proper use of the leveling screws, it is possible to hold it entirely free from the counter frame and glass top and thus eliminate the breakage of panels and tops which would otherwise result.

The pan should be provided with either retinned copper meat pans and soup tureen or white enamel ware of the same pattern. These are stock sizes and can be secured anywhere. The gravy and vegetable dishes should be of vitrified cooking china, not stoneware or porcelain enamel. No covers are needed except on the gravy and soup tureen. These should be of copper, nickel-plated. Most states now require a counter protector to be placed in front of the steam table. This should be of ¼-inch polished plate glass 12 inches high and 12 inches wide. The glass is held in nickel-plated brackets securely bolted to the counter top. The upright sections must have 1-inch openings cut in them at top and bottom to allow the escape of steam.

Following the steam table is an 8-foot space for pastry and desserts, which should be equipped with a double display shelf above. This shelf is 19 inches high over-all by 18 inches wide, with an intermediate shelf 7 inches below the top. The glass should be of ¼-inch plate with all edges

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polished and held in a continuous nickel-plated framework made of 5/8-inch square brass tubing supported on 1-inch uprights. This stand is then bolted through the counter top to hold it rigidly in place.

The next fixture is the combined ice cream and milk cabinet, which is 5 feet in length by 22 inches in width. It is divided into two nearly equal compartments with an insulated partition between. The ice cream section will hold two 5-gallon packing cans, and the milk section four tiers of 8-ounce milk bottles. This section has removable racks, which can be taken out if it is preferred to use milk in bulk, placing the regulation milk cans in the cabinet. Salt and ice are used around the ice cream, and ice only around the milk. The interior of both compartments is lined with tinned copper, the walls insulated with 2-inch sheet cork board, and the exterior covered with galvanized iron. All exposed parts, including a hinged cover over the ice cream cans, are covered with nickel-silver, the front and ends are flanged and the fixture mounted on adjustable feet. Two feet of space for serving drinks ends the counter, and beyond this and at right angles to it is placed an urn stand 64 inches long by 24 inches wide by 36 inches high. The top of this is usually arranged to carry a three-piece battery of urns consisting of two 8-gallon coffee urns and one 20-gallon hot-water urn. The hot water urn is best fitted with a safety valve and syphon tubes to carry boiling water to the jackets and coffee jars of each urn. Faucets and gage connections should be silver plated, coffee jars of white china, and the body of each urn should be made of 32-ounce cold-rolled copper tinned on the inside and nickel plated on the outside.

Beneath the faucets the urn tray should be supplied with a drain trough 4 inches wide and the full length of the stand, and fitted with a removable nickel-silver perforated cover in two sections. The entire exposed top is of 20-gage nickel-silver stretched over steel. Beneath there should be a planished iron cup warmer of open construction, with two shelves and supported on 6-inch white porcelain feet the same as the counter, the exposed back and ends of white porcelain held in nickel-silver framework. Glass is impractical here because of the heat.

The extra size of the hot water urn insures ample supply for those demanding tea. Cream for coffee or tea is best dispensed by using a cream urn fitted with an automatic faucet which delivers the right amount for one cup of coffee or tea by one turn or pinch of the handle. The walls of this urn should be of double copper with 1-inch sheet cork insulation between. This will keep cream cold and free from danger of souring for several hours without the use of ice. The urn may be placed on the urn stand next to whichever coffee urn is being used. The faucet is easily removable and can be thoroughly washed and sterilized after each meal.

The end of the counter, or a separate stand next to it, serves as a checker's stand. This is generally of the same construction as the counter, with the white glass top replaced with one of black. The rail extends continuously from the counter across the front of this stand. A stand 36 by 24 inches by 36 inches high is sufficient. In many instances the girl, in addition to checking the trays, takes the money and thus does away with the necessity of a second girl.

The tables are separated from the counter by a guard-rail generally made of 2-inch nickel-plated brass tubing held in 36-inch uprights of the same. Similarly, the approach to the counter is designated from the entrance door. Some prefer the use of mercerized guard-rope hung on porcelained posts. The rope as well as the posts may be selected in any color and thus assist the decoration scheme of the room.

Considerable variation is found in the slide rails which are used. Originally only a single rail was provided, but lately multiple rails have been in demand. Most states require counter protection in front of steam tables, which necessitates the use of a bracket holding the rear rail far enough in front of the counter to permit the counter protector to go back of it. Slide rails should be made of solid nickel-silver tubing not over 7/8-inch in diameter. A three-bar rail extending about 10 inches in front of the counter and set with the top of the rail 2 inches below the counter top is best suited to school use. The brackets which hold this rail should be of heavy cast brass polished and nickel-plated. Such a rail is quickly cleaned and shows little wear except a

Tarvia

For Road Construction Repair and Maintenance

Main Street, Harlingen, Texas
Tarvia surface treatment since 1920

Along the Rio Grande—

Twenty-five years ago the Rio Grande Valley, in southern Texas, was an arid, desert waste. Today it is called the "Winter Garden of America."

Irrigation, which the courageous, resourceful settlers secured by pumping water from the Rio Grande, has transformed the stretches of barren sand into fertile farms and plantations. And good roads, which have been obtained by surface-treating the natural caliche and adobe gravel roads with Tarvia, bring the diversified crops, worth millions of dollars annually, within easy reach of the railroads and marketing centers.

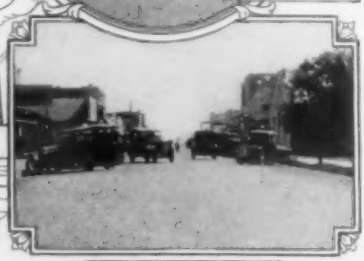
In the Valley are thriving towns, the largest of which are Mission, McAllen, Mercedes, and Harlingen. Here, too, the broad Tarvia-paved streets give unmistakable evidence of prosperity and sound, substantial growth.

In selecting Tarvia for all their road-building and road-maintenance work, these far-sighted pioneers showed characteristic good judgment.

For with no other material could they have converted, at such small expense, their unimproved roads into smooth, dustless, mudless, all-year highways.

Avenue of Palms, McAllen, Texas
Tarvia surface treatment since 1919

Texas Ave., Mercedes
Tarvia surface treatment since 1919



La Lomita St., Mission, Tarvia surface treatment since 1919

Tarvia is a dense coal-tar material. It is unequalled for building new roads, for resurfacing worn-out macadam, for repairing and maintaining improved roads of every type. Special grades are made for specific uses.

New York Chicago Philadelphia Boston
Detroit New Orleans Birmingham Kansas City
Peoria Atlanta Duluth Milwaukee
Youngstown Toledo Columbus Richmond
Baltimore Omaha Jacksonville Houston

The Barrett Company

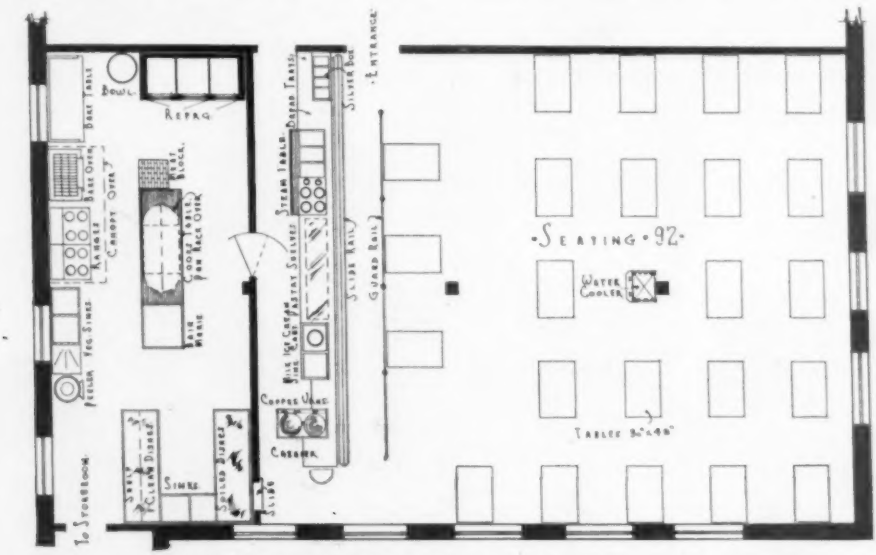
St. Louis Cleveland Cincinnati Pittsburgh
Minneapolis Dallas Syracuse Salt Lake City
Bangor Washington Johnstown Lebanon
Latrobe Bethlehem Elizabeth Buffalo
Denver San Francisco

THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N.S.

slight flattening of the top surface.

This description of the typical serving unit covers the construction most commonly selected and one which will longest retain its original appearance. When it is necessary to cut down the expense, the same sizes of equipment may be selected, but with all glass, porcelain, and nickel-silver eliminated and in their place painted galvanized iron used as a substitute. In such instances counter tops are made of maple or marble, held in nickel-plated frames and of suitable size and height to carry a standard 12 by 16-inch aluminum tray filled with tumblers.

The tables may be either 30 by 48-inch, 36 by 36-inch or 30 by 72-inch. The first size is most common, as it is easy to handle and may be set end to end in rows of as many tables as are necessary to economize space. If 10 or 11 square feet are allowed per seat, tables may be separated to allow aisles between the rows. At least one broad



SCHOOL CAFETERIA WITH SEATING CAPACITY OF NINETY-TWO

and steam tables, urn-stands, etc., of polished copper or brass.

The dining-room proper should be supplied with tables, chairs and one or more water-coolers. The water-cooler is best centrally located, and consists of a copper-lined tank insulated with a 2-inch sheet cork. The walls of this tank are lined with two ¾-inch galvanized coils, having a total length of over 40 feet. Ice is packed around the coils and the end of each coil is filled with two lift-up pressure faucets. The water-supply line is connected direct to the other end of the coil and a suitable drainer attached beneath the faucets. In order to make the cooler attractive, all sides are usually covered with white glass or porcelain held in nickel-silver framework, with the entire fixture mounted on nickel uprights. At both ends of the cooler there may be a series of four white-glass shelves

aisle in each direction should be arranged to permit easy entrance and exit from the room. The table may have a ¾-inch white glass top placed on a wooden base of knock-down construction which allows adjustment of the legs to take up differences in floor levels. If a cheaper table is necessary, replace the glass top with one of wood finished with spar varnish. A well-finished wooden-top table will withstand the nine months' wear and require refinishing only during the summer vacation.

Chairs should be light, yet substantial. The imported bentwood answers both these requirements and comes in many designs, from those selling at $36 a dozen to others at nearly that price for each. The best selection for wear is a 16-inch composition seat and a natural finish of either oak or mahogany. Domestic bentwood chairs are slightly cheaper, but their life is far less.

BEAUTIFUL
RESIDENTIAL
STREET ILLUMINATION
King White Way Posts and General Electric Fixtures can not be equalled for beauty of designs, or permanency of materials.
They are the most economical and effective street and boulevard lighting equipment made today.
Consult our Specialists before you proceed with your plans for better illuminated streets. They are at your service.
KING MANUFACTURING CO.
St. Joseph, Mo. Chicago, Ill.

Illuminating the Facade of a County Court House

Concrete Standards Harmonize with the Building

TRAVELERS through Newark, N. J., are well acquainted with the beauties of the exterior of the Essex County Court House in that city. Only recently, however, has the exterior of this building been adequately illuminated to give a proper display of its architectural beauty at night. The lamps in the former illuminating system were mounted on two old wooden posts which were distinctly out of harmony with the $5,000,000 building.

Recently, new lights have been installed on each side of the broad stairway leading up to the main entrance. These lights throw a softly diffused glow over the white marble façade and bring out more distinctly the ornamental statues which cap the wide balustrade on either side of the stairway.

ESSEX COUNTY COURT HOUSE, NEWARK, N. J., SHOWING WHITE MARBLE CONCRETE LIGHTING STANDARD ON EITHER SIDE OF STEPS

THE CONCRETE STANDARDS HARMONIZE WITH THE SURROUNDINGS

The problem solved was the adequate illumination of the front of the building, which is finished in white marble with eight large Corinthian columns, and the proper illumination of the two statues on the balustrade. The use of flood lighting on the building immediately suggested itself, but such an installation would have silhouetted the fine St. Gaudens statue of Lincoln near the street in front of the building, and therefore detracted from its appearance. This limited the choice to the selection of means for mounting lights near the building. Bracket poles were considered, but were rejected because they would not harmonize with the columns which are the principal feature of the façade, and no material but concrete could be made to blend as artistically with the marble walls.

It was therefore decided to use concrete poles of an artistic design

HOLLOWSPUN
Lighting Standards
THE Gay Street Viaduct, Knoxville, Tenn., was lighted with Hollowspun reinforced concrete lighting standards because:
They are ornamental and harmonize with the concrete structure.
They are as permanent as the viaduct itself and require minimum upkeep.
They are strong enough to support the trolley wires as well as the lights.
They can withstand the engine gases from trains passing under the viaduct.
The supervising engineer writes, "The standards have proved satisfactory in every respect."
Ask for Catalog Supplement No. 9 for detailed information on this and other standards.
MASSEY CONCRETE PRODUCTS CORPORATION
Peoples Gas Building, Chicago

and with a surface which would harmonize with the marble. The consulting engineers, Runyon & Carey, Newark, N. J., had recently had experience with concrete lighting standards at the Essex County Sanitarium, Verona, N. J., and secured somewhat similar poles from the Massey Concrete Products Corporation for this installation.

The concrete poles support stippled globes and dome refractors which were adapted by the General Electric Company from one of its bronze fixtures to cap these poles. These fixtures use 1,000-candle-power lamps. The poles are in reality quite long, but they are in keeping with the lines of the building even when viewed from the lawn. From the front, however, the poles appear shorter and seem to grow out of the pedestals. They are near enough to the building to flood it with a soft light and at the same time near enough to the statues to illuminate them.

P. R. in a Nutshell

THE following concise and practically complete explanation of proportional representation was given as an after-dinner speech at the City Manager's Convention in Chicago, when Walter J. Millard, Field Secretary of the Proportional Representation League, explained "P. R." in two and two-thirds minutes:

"It stands to reason that if a representative body is to be really representative, a majority should elect a majority, but a minority should elect a minority. Assuming that your city council is nine men, therefore, you can obtain that result if approximately one-ninth of the voters can elect one man; for in that case five-ninths of the voters will elect a majority.

"In order to carry that out, the proportional system offers every voter a ballot which he can mark in such a way that his vote will be counted in one of the nine piles. He cannot know in advance whether a candidate for whom he votes his first choice will receive a quota or more than a quota. He is therefore given an opportunity to mark preferences among the candidates in the same way that you might tell someone to go to the fruit store. You would say, 'If you can't get apples bring oranges, and if you can't get oranges bring grapes.' You mark one, two, three, four, five, six, seven, etc., among the candidates' names.

"These ballots are brought together at a central counting place; a calculation is made to find what a quota is; if any candidate has more than a quota, the surplus is taken in a fair way; each ballot of the surplus is transferred to the candidate marked as next available choice on it, and when any candidate is thus brought up to a quota, he is declared elected. Then, if there are no other candidates with surpluses, the lowest man is declared defeated, and his ballots are transferred, each to the next available choice on it. Next, the candidate now lowest is declared defeated, and his ballots transferred in the same way. Thus the count is continued until finally nine piles of ballots are created. Each of these piles represents a group of voters who are unanimous under the circumstances in wanting that candidate.

"To the voter it is simpler than any other voting system, since it takes from him all questions as to chance of election and leaves his mind free only to discuss the question of the policy of the candidate. The question of count is so simple that I have taken high school boys and in twenty minutes explained it to them. I have then gone out of the room and they have elected their student councils that way ever after."

The City Engineer as "First Deputy"

The taxpayer's "first deputy" in civic construction enterprises, and particularly in street improvement, is the City Engineer. This man must faithfully represent the property owners as the one who is responsible for the success or failure of the community pavements. He must be experienced in municipal work, skilled in designing and constructing public utilities, must be courageous and ever ready to investigate new methods and materials, and willing to adapt those innovations in which he finds merit to the needs of his city. Such a man is worth many times the salary he asks. The poorest form of economy a city can adopt is to select an engineer of limited ability because he offers to attempt the direction of a city's improvements for a few hundreds or a few thousands less salary than must be paid to secure a competent engineer of genuine ability and character.

Pittsburgh Police

Get 25 More Harley-Davidsons

PITTSBURGH has used Harley-Davidson Police Motorcycles *exclusively* for nine years. Just recently this city purchased 25 new Harley-Davidsons after investigating several other makes of motorcycles.

Pittsburgh is one of 1,000 or more cities and towns that use "America's Police Motorcycle." In towns of 500 or 1,000 population—where one or two Harley-Davidsons are on duty—and in many large cities where scores of motorcycle policemen fight crime—this sturdy, dependable, durable, economical speed-mount is paying big dividends.

Let us tell you how a Harley-Davidson will quickly pay for itself and thereafter earn *your* city, county or town a neat profit every month for years.

Write for free illustrated literature on Police Motorcycles. Also the *new reduced prices* and the 10 *improvements* on 1923 models. No obligation to you—but you want to know what the Harley-Davidson can mean to your city or town.

Harley-Davidson
World's Champion Motorcycle

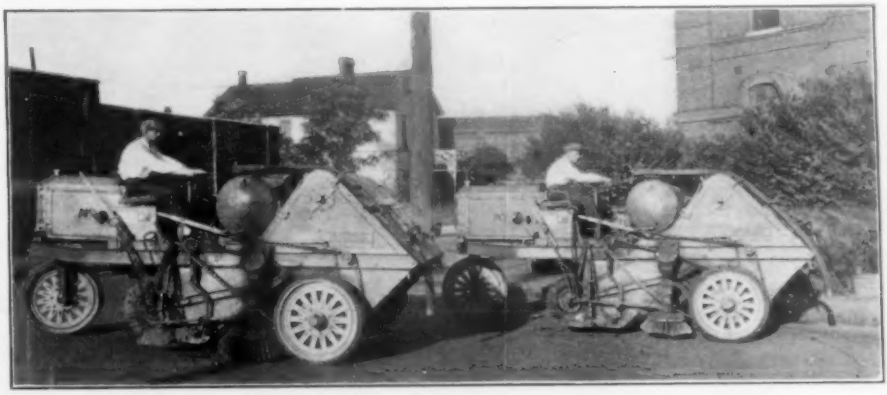
HARLEY - DAVIDSON MOTOR CO.
MILWAUKEE, WISCONSIN

When writing to Advertisers please mention THE AMERICAN CITY.

The Development of Street Sweeping

Horse-drawn Sweepers Have Been Practically Replaced by Motor-driven and Pick-up Types

FROM the horse-drawn sweeper which brushes the dirt to one side, the first step in the development of the motor-driven sweeper was one which undertook the task in the same manner. This step was taken by European engineers. A machine of this type was not built in America until after the advent of the motor pick-up sweeper. The motor-driven machine brought out in Europe cut the cost of sweeping materially, the estimates showing a reduction of 20 to 35 per cent. Following this, American engineers in 1914 brought out a machine that did what the European machine accomplished—spraying and sweeping, but it also picked up the sweepings. This still further cut down the cost of sweeping, but another step was necessary to bring a greater cut in cost and make the machine truly effective.



PICK-UP SWEEPERS WITH GUTTER ATTACHMENTS, MEMPHIS, TENN.

The first motor-pick-up sweeper did not provide means for cleaning gutters, and the result was that the labor of two gutter men had to be added to get a complete job. Increased motor traffic has resulted in pushing more refuse from the center of the street toward the gutter. Consequently, to save labor and to remove the extra refuse from the gutter, a special attachment has been developed.

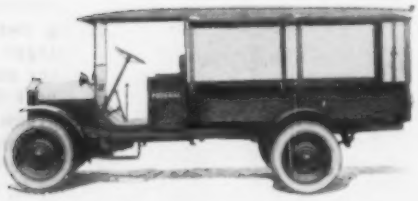
Costs given for one city may not be applicable in another, on account of the difference in the efficiency of the departments, in the personnel, or in cost-keeping methods. One city may allot capital charges to the record of the work done; another may not. One city may clean the areas near the curb and credit the unit with the pavement from curb to curb; another may credit only the number of square yards actually covered by the cleaning unit. The latter is, of course, fairest for comparative purposes, but there are many cities that use each method of figuring yardage. One Southern city whose cost was 89 cents per 1,000 square yards by horse-drawn sweepers is now cleaning its pavements with a pick-up sweeper at a cost of 9 cents. This particular city figures only the square yards cleaned in each instance.

Costs in Joplin, Mo.

Joplin, Mo., where a jump was made from hand-brooming to motor pick-up sweeping, makes the following report under date of May 19, 1922, giving figures from the payrolls and garage reports:

Average cost per month for street cleaning, based on present scale of wages, and amount of labor used, taken for a period of six months previous to the installation of motor sweeper.....	$ 1,922.31	
Cost for 48 months.....		$92,270.88

The FEDERAL *Fast Express* is Worthy of the FEDERAL Name



This FAST EXPRESS embodies all the proved points of reliability that have built a good reputation for all other Federals. This truck will serve you longer, deliver your goods faster at less expense than any other light-delivery truck. Its low price is paralleled by its remarkably low operating costs.

FEDERAL

Today, Motor trucks are a known and necessary quantity in the business world, and—thanks to Federal—a known quality as well. The new FAST EXPRESS will lower your haulage costs and at the same time deliver a high grade of steady dependable transportation. It's *Another* Federal—in every way worthy of the Federal name.

FEDERAL MOTOR TRUCK CO.
Detroit, U. S. A.

For years, the very name Federal has identified every truck that carried it as a sturdy, dependable, enduring and economical truck for the hardest use or even abuse. No matter how heavy the load, or how exacting your haulage requirements, you can safely rely upon the known and recognized superiority of Federal. We will be glad to recommend the Federal best suited to your own needs.

FEDERAL

Average cost per month for street cleaning since installation of motor sweeper, based on first six months' operation and last six months previous to this date—		
Labor	960.36	
Gasoline, oil, brooms, etc.	109.06	
Maintenance in excess of maintenance necessary for hand sweeping	50.00	
Total average cost per month	$ 1,119.42	
Cost for 48 months		$53,732.16
Cost of motor sweeper	$ 6,500.00	
Interest, 8 per cent for 4 years	2,080.00	
Total equipment cost	$ 8,580.00	
		$ 8,580.00
Summary—		
Total cost hand sweeping for 4 years		$92,270.88
Total cost motor sweeping	$53,732.16	
Total cost motor sweeper	8,580.00	
Total cost motor sweeper method		$62,312.16
Net saving by motor sweeper method for 4 years		$29,958.72

Motor Sweepers in Chicago

The experience of Chicago, which has 16 motor sweepers, is another commentary on the record of progress made in street cleaning by this method. The saving effected by comparing the latest method of cleaning streets with the earliest hand brooming is 44½ cents per 1,000 square yards. A recent municipal report from Chicago states: "Like other motor-driven machinery, they have improved steadily, until now they are reliable and serviceable and, aside from ordinary mechanical trouble, are kept in constant service during the street-cleaning season. It costs us 21½ cents per 1,000 square yards to clean with a motor sweeper, while hand brooming costs 66."

Primarily, the cost of motor sweeping depends on the mechanism used, the care with which it is kept by the department owning it, and the familiarity of the department with motor sweeping, which includes efficient routing. There are other factors which make the costs vary, but these are unquestionably the primary determining factors. As an illustration of the way costs will be reduced and performance improved as the department and operators become familiar with motor sweeping, we have the record of Washington, D. C., where motor sweeping was first undertaken in the latter part of June, 1921. It is interesting to note that the costs decreased gradually from $0.364 in the first month to $0.166 in the last month for which the record is available:

	Total Yardage	Cost per 1,000 Square Yards
July, 1921	4,441,000	$.364
August, 1921	4,222,000	.174
September, 1921	4,064,000	.214
October, 1921	3,313,000	*.351
November, 1921	3,646,000	.233
December, 1921	3,738,000	.249
January, 1922	2,932,000	†.348
February, 1922	1,875,000	.293
March, 1922	4,758,000	.182
April, 1922	5,256,000	.166

* Heavy leaf work. † Bad weather conditions.

In a general report from which the following record of street cleaning with motor sweepers has been abstracted, the data cover the entire year of 1921 and charge the department with repairs, casing and tubes, salaries, departmental charges, supplies, office supplies, storekeepers' charges, express and freight, insurance, advertisements, miscellaneous, and even ice. The totals were divided so as to show amounts properly chargeable against each department of the street cleaning work. This report, from William H. Hugo, Superintendent of Street Cleaning, Memphis, Tenn., shows that in the 8 months of 1921 after the receipt of two motor sweepers 104,913,140 square yards were cleaned. This is an average of more than 6½ million square yards per motor sweeper per month, the motor sweepers operating only in the daytime. Because of the extensive yardage cleaned, there resulted a lowering of street cleaning costs to 8 cents per 1,000 square yards by motor sweepers, and this cost included every charge against the work as described above.

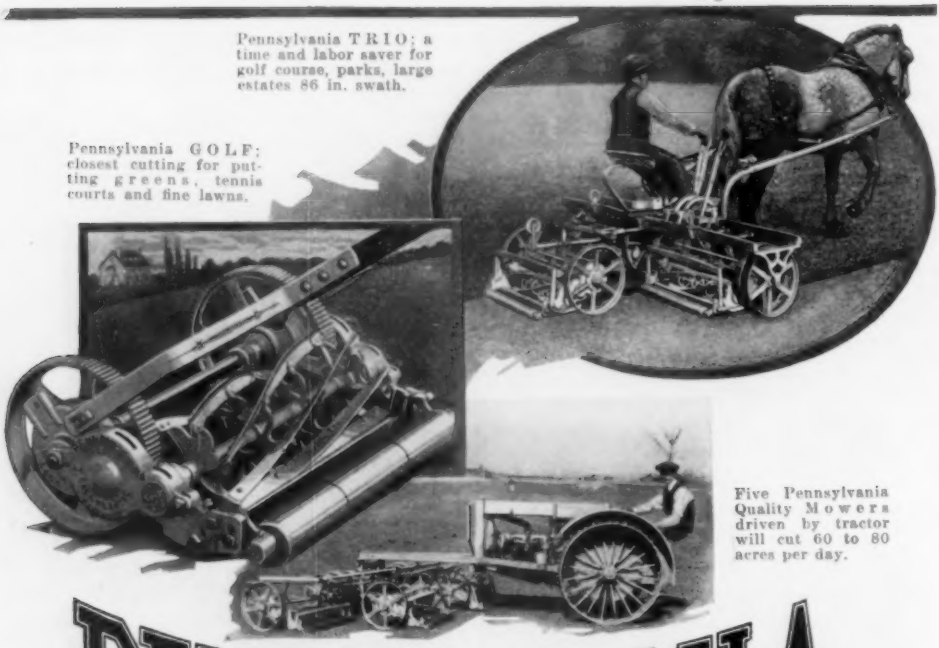
Fire Prevention Day—October 9

This is a splendid institution. It provides an occasion for getting rid of accumulated trash. But the wise citizens and public officials will not let trash accumulate. They will

Make Every Day Fire Prevention Day

Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates 86 in. swath.

Pennsylvania GOLF; closest cutting for putting greens, tennis courts and fine lawns.



Five Pennsylvania Quality Mowers driven by tractor will cut 60 to 80 acres per day.

PENNSYLVANIA *QUALITY* LAWN MOWERS

NO MATTER what kind of a job they have been put up against, Pennsylvania *Quality* Mowers have more than met every requirement.

Their record shows longest, most satisfactory service, least upkeep cost and greatest durability in lawn mower history.

Exclusive features, self-sharpening, crucible, tool steel blades, automobile type ball bearings, selected material and specialized manufacturing processes assure the most satisfactory and the most economical service.

Write for "Pennsylvania TRIO Book"

Pennsylvania Lawn Mower Works, Inc.

1615 North 23rd Street, Philadelphia

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Limitations on Right of Home-Rule Cities to Adopt Zoning Regulations

The Detroit home-rule charter was held by the Michigan Supreme Court in the case of Clements vs. McCabe, 177 Northwestern Reporter, 722, to be insufficient in its provisions to authorize the city under the guise of its police power to impose restrictions on otherwise unrestricted property by a general zoning system excluding trades and businesses from particular areas. In the course of its opinion, the Court observes:

"We may admit that the legal incorporation and organization of a city for local governmental purpose necessarily invests it with certain primary police powers within the conceded sphere of such power fundamentally essential to the ends for which it was created. But beyond the comparatively narrow limits of such necessary implication, the police power, like any other power conferred on a municipality, must be expressly delegated by the constitution or Legislature of the state.

"The assumed power of the city to zone its territory according to the extensive project in so-called 'municipal evolution' indicated by this ordinance is yet clearly within the debatable sphere of police power. No such inherent zoning power exists or can be implied in this state from the mere incorporation of a city as such.

"Of the invoked constitution and legislative authority, it may first be noted that no hint of recognition of any scheme for municipal evolution on a general zoning basis is manifested by direct mention of the subject or suggestive wording point in that direction. It is beyond question when the people of this state adopted their constitution police power was placed in the Legislature, except as distinctly reserved or conferred elsewhere. The constitutional provision conferring upon cities a greater degree of governmental independence in their strictly local concerns and the right under certain conditions to adopt, revise, and amend their charters, is not framed as a self-executing provision, but contemplates, and requires, that the Legislature shall supplement it by enactment of a general law for the incorporation of cities. Upon the scope of such law only a few definite constitutional limitations are set, with certain enumerated rights given to cities when so incorporated. The right contended for here is not amongst those specified.

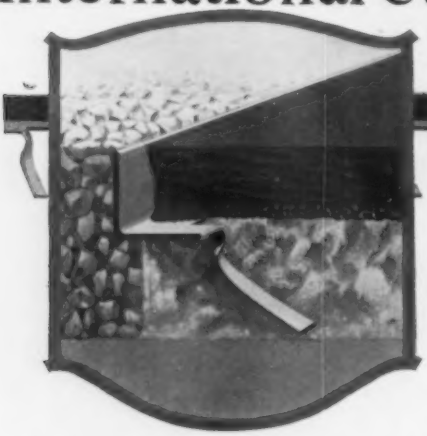
"In support of the contention that the police power invoked was directly delegated to cities by the constitution, counsel point to the provision in section 21 of article 8 authorizing a city to pass all laws and ordinances 'relating to its municipal concerns,' and assert, truthfully, that these words are 'very broad.' They are also very general and indefinite words which cannot fairly be construed to plainly designate in concrete terms, or even suggest, a direct constitutional grant of power to cities of such unusual scope and far-reaching possibilities as the yet in many respects debatable police power sought to be exercised in the proposed zoning plan. . . .

"The controlling test is whether by any adequate, definite provision in the constitution or general act passed pursuant to it, cities have been vested with this evolutionary and comprehensive police power of zoning asserted here. Independent of legislation, the constitution confers no such grant of power directly upon cities. Assuming, but not deciding, that such power is by the constitution committed to the Legislature, it has not by express grant in adequate terms delegated the same to cities."

Cities Must Maintain Culverts Sufficient to Accommodate Increased Flow of Surface Water Caused by Changed Conditions

The duty of a municipal corporation with respect to culverts to take care of surface water coming through a natural drain does not end with the original installation, but is a continuing one, to be exercised with due regard to changed conditions affecting the flow of water to be accommodated by the culverts. Even though arches and culverts over natural drains were originally adequate, the city could not wait until experience demonstrated their inadequacy by floods before making changes necessary to protect the property of landowners, if the city could reasonably be charged with knowledge that its own operations had so materially increased the flow to be expected in times of flood as to render the outlets insufficient. (Virginia Supreme Court of Appeals, City of Richmond vs. Cheatwood, 107 Southeastern Reporter, 820.)

International Steel Paving Guards Cut Paving Costs-



Don't Waste Money Building Headers—

Pavement without protected edges is quickly ruined—concrete headers and stone shoulders cannot stand today's traffic—steel guards are the only real protection—325,000 feet of guards on roads of rough traffic prove their superiority and economy.

Cheaper to install—cheaper to maintain. Built in different sizes for all surfaces and foundations.

CIRCULAR ON REQUEST.

International Steel Tie Co., Cleveland, O.

THE WORTHINGTON MOWER

WORTHINGTON TRACTOR AND "CONVERTIBLE QUINT"

SPECIAL FEATURES OF THE "CONVERTIBLE QUINT"

Third section may be attached to any Shawnee Triple at present in service and instantly detached by removing a single kingbolt.

Triple mower cuts swath of seven feet.

Quint attachment increases swath to eleven feet four inches—a gain of 65 per cent.

The public is advised that the combination of gang lawn mowers with mower tractor, either of the draft or push type, is fully covered by U. S. Patents issued and pending, owned or controlled by this company; that the sale of any tractor used in combination with a gang mower may render the vendor or user liable for infringement. This company will protect its rights.

WORTHINGTON MOWER COMPANY — Shawnee on Delaware, Pennsylvania

CHICAGO 53 West Jackson Blvd. | NEW YORK 8 West 40th Street | MONTREAL 109 Youville Square

Not Always Essential to Annexation Proceedings That Consent Be Obtained from Inhabitants of Territory Annexed

That, subject to constitutional limitations, the legislature of a state may authorize annexation to a municipality of territory without the consent of the inhabitants of such territory, is decided by the Missouri Supreme Court in the matter of the City of Uniondale, 225 Southwestern Reporter, 985:

"It is said that taxpayers who are opposed to incorporating a given territory into a city should be accorded the right to be heard in a proceeding instituted for that purpose, because, if sustained, it subjects them to the burdens of municipal taxation. In answer to this contention it is sufficient to say that the giving or withholding of such right is a matter that rests wholly within the discretion of the Legislature. It is not essential to the validity of the proceeding that all taxpayers who may be affected thereby have their day in court. The Legislature has the power to incorporate territory into a city with or without the consent of its inhabitants (St. Louis vs. Allen, 13 Mo. 400; Taylor vs. Carondelet, 22 Mo. 105, 110), provided it does it by general law (Const. art 9, Sec. 7)."

Police Officer's Official Bond Held Not Available to Citizen Injured

Under an ordinance requiring a supernumerary patrolman to give a bond to faithfully perform his duties, his sureties are not liable to an individual unlawfully shot by the officer while acting in his official capacity, holds the Tennessee Supreme Court in the case of Carr vs. Knoxville, 234 Southwestern Reporter, 328. The Court said:

"It is not shown that the bond sued on in the instant case was one authorized or required by any provision of the city charter. So far as the record shows, the only authority for this bond is the ordinance hereinbefore referred to, and which reads as follows:

"'All policemen, before entering upon the discharge of their duties, shall file with the recorder bonds in such penalty as the mayor shall require, conditioned for the faithful performance of their duties, and signed by two sureties to be approved by the mayor.'

"This ordinance does not authorize suits by third parties on the bonds of policemen given in accordance with the provisions of said ordinance. In other words, there is an entire absence of statutory authority for suits of this nature by third parties on bonds of policemen of the city of Knoxville."

In Alexander v. Ison et al., 107 Ga. 745, 33 S. E. 657, it was held by the Georgia Supreme Court that a citizen upon whom a tort had been committed by the chief of police of a city has no right of action therefor against him and his sureties upon a bond executed in pursuance of a provision of the charter of the city that such official shall give bond in such sum, and with such security, and shall take such oath before entering upon the discharge of his duties as the mayor and council may prescribe, and conditioned that he shall well and truly demean himself in the office to which he has been elected, and well and truly account for all moneys coming into his hands by reason of his office.

The Court in that case said:

"Upon general principles, a citizen upon whom the chief of police has committed a tort [wrong] would have no such right, for the obvious reason that there is no privity of contract between him and the bonded officer or his sureties. Being an entire stranger to the contract, it would require express legislative authority to give him a right of action thereon."

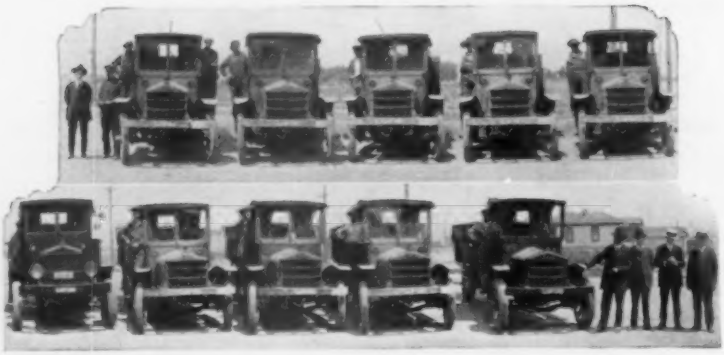
A Building Regulation Adopted from a Foreign Body by Reference Held to Be Void

An ordinance of the city of Lowell provided that in issuing permits for installation of electric wiring systems the inspector of wires should "require that the established rules and regulations of the National Board of Fire Underwriters * * * be complied with." Holding that the ordinance is invalid in this respect, the Massachusetts Supreme Judicial Court decides that there is nothing in the statutes of the Commonwealth "which empowers a city council to adopt by mere reference the rules and regulations of another and foreign body as the basis for determining the suitableness or safety of the insulation, attachments, supports or appliances for wiring designed to carry electric currents." (Cawley vs. Northern Waste Company, 132 Northeastern Reporter, 365.)

Municipality Not Liable for Defect in Firemen's Quarters

Maintenance by city of a fire department building is held by the Georgia Supreme Court to be in the exercise of governmental powers exempting the municipality from liability to a fireman injured while descending a pole from the sleeping quarters, although the pole and the floor of the building may have been negligently maintained in a defective condition. (Miller vs. City of Macon, 110 Southeastern Reporter, 873.)

Here's the Sanitary Dept. Fleet of Berkeley, California



Ten Garfords During Nine Months of Operation in Berkeley, California Haven't Missed Their Duty Once—No Repair Expense Whatever.

Ten Garford Dump Trucks are responsible for the collections of garbage and rubbish, safe-guarding the health of this wonderful California city of homes.

For nine months, since the Garford fleet was put into operation their hasn't been a single delay or missed schedule of collections in this important work.

Charles D. Heywood, Commissioner of Public Health and Safety; Elmer Bell, City Auditor; C. C. Newkirk, Sanitary Engineer; as well as other Berkeley officials not shown in the photograph, are enthusiastic over the possibilities of such truck service in the daily life of cities.

Garford reliability, in the opinion of officials who know, as well as their sturdiness under load, are the main factors in their value to municipalities.

No matter what the requirements of the job are, there is a Garford model and Garford body equipment exactly suited to it. This is because Garford engineers have patiently studied the needs of all kinds of hauling.

There is no obligation in obtaining the recommendations of Garford engineers. A communication will place at your disposal valuable facts for any public official on whom rests responsibilities that must be met.

Write today.

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of 1, 1½, 2½, 4, 5 and 7½ Ton Trucks

GARFORD

DEPENDABLE TRANSPORTATION

Municipal and Civic Publications

Prices do not include postage unless so stated

CRIME, ITS CAUSE AND TREATMENT

Clarence Darrow. Thomas Y. Crowell Company, New York. 1922. X + 292 pp. $2.50.

This book endeavors to meet one of the problems which confront the world to-day. Crime waves have been common in the newspapers of recent years, and this book presents the reflections and experience of more than forty years in court. The author contends that crime, as much as insanity and disease, deserves intelligent treatment at the hands of wise and humane specialists. Some will regard the book as a plea or an apology for the criminal. To hold him blameless would justify this charge, but if man's actions are governed by natural law, the sooner such a fact is recognized and understood, the sooner will sane treatment be adopted in dealing with crime. The book is a systematic treatise which considers the subject from the standpoint of biology and psychology, as well as from the legal and sociological view-points. It covers in brief: the purpose of punishment; the responsibility for crime; environment; the criminal; the various types of crimes against person and property; the law; prevalence of crime; punishments and their effects; social control; industrialism and crime; and the important subject of pardons, paroles and remedies.

GRAPHIC CHARTS IN BUSINESS

Allan C. Haskell and Joseph G. Breaznell. Introduction by Richard T. Dana, Consulting Engineer. Codex Book Company, Inc., New York. 1922. 250 pp. Illustrated. $4.

This book, intended as a companion volume to "How to Make and Use Graphic Charts," by the same author, is a testimony to the extraordinary growth of the use of graphic methods in business during the last five years. Following the practice in the author's earlier work, there is given in this volume a biography of the principal books and articles containing material on business statistics and graphic methods. The volume itself discusses the elements of the graphic chart, the kinds best adapted to business, the making of charts, plain and ratio rulings, the time element, ratio charts, and all the other varieties of graphic presentations. As might be expected of such a volume, it is profusely illustrated with charts and diagrams which make graphic the instruction in the text.

REFERENCE VOLUMES FOR MUNICIPAL OFFICIALS

The value of the Encyclopedia Americana for municipal officials as a reference work is tremendous. Full information regarding this valuable encyclopedia may be secured by writing to the Encyclopedia Americana Corporation, Albany, N. Y.

THE CITY OF AUCKLAND, NEW ZEALAND

Municipal and Official Handbook of the City of Auckland. Edited by John Barr, Chief Librarian. Prepared by direction of the Auckland City Council. 1922. A cloth-bound volume of XIV + 242 pp. Profusely illustrated. Covering in a most interesting manner and in convenient form the development of this 70-year-old city, and showing its present activities and functions. (Apply to the Chief Librarian.)

THE POLITICAL INTEGRATION OF METROPOLITAN COMMUNITIES

A study of the political unification of metropolitan areas, by Chester C. Maxey, of Western Reserve University, published in the August, 1922, issue of the **National Municipal Review.** 24 pp. Dealing with what has been accomplished toward this end in Baltimore, Philadelphia, San Francisco, St. Louis, New York, Denver, Pittsburgh, Wheeling, and Washington, D. C., and what remains to be accomplished in Boston, Chicago, Cleveland, Alameda County, Calif., Portland, Ore., Los Angeles, Essex County, N. J., and elsewhere, and clearly summarizing the outstanding facts. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.)

ANTIMALARIA WORK

"On the Possiblities of Using Mosquito Traps in Antimalaria Work." By C. W. Metz, Carnegie Institution of Washington, and Collaborating Biologist, United States Public Health Service. Reprint No. 716 from the Public Health Reports, August, 1920. Published 1922. 8 pp. Illustrated. Price 5 cents. (Apply to the Government Printing Office, Washington, D. C.)

ZONING FOR CITIES AND TOWNS

By Rolland S. Wallis, Municipal Engineer, Department of Engineering Extension, Iowa State College, Ames, Iowa, also Secretary of the Iowa Town Planning Association. Issued as Bulletin No. 52 of the Engineering Extension Department of the College, May 10, 1922. 16 pp. Covering the principles, advantages, legality and procedure of zoning, and urging its adoption for Iowa. (Apply to author.)

THE LOADING OF FILTER PLANTS

By H. W. Streeter, Associate Sanitary Engineer, United States Public Health Service. Reprint No. 737 from the Public Health Reports, March 31, 1922. 16 pp. Tables and diagrams. An abstract of this paper was read at the annual meeting of the American Water Works Association, Cleveland, Ohio, June, 1921. "The excessive loading of water-purification plants in the more populous sections of the country is rapidly assuming the proportions of a widespread and serious problem, in spite of the remarkable progress that has been made in lowering the typhoid-fever rate in a large number of our cities." (Apply to the Government Printing Office, Washington, D. C.)

WATER-SUPPLY FOR MEMPHIS, TENN.

A report to the Artesian Water Department of Memphis by Fuller & McClintock, consulting engineers, of New York City. March, 1922. 88 pp. Maps, diagrams, tables. A survey of present conditions, and conclusions and recommendations for the future development of the city water-supply. (Apply to F. G. Proutt, Chairman of the Board of Water Commissioners.)

THE GARDEN CITY

"Are Great Cities a Menace? The Garden City a Way Out." By Lawrence Veiller. 12 pp. Illustrated. Reprinted from the **Architectural Record,** February, 1922. National Housing Association Publications, No. 57. Price 25 cents. (Apply to the National Housing Association, 105 East 22nd Street, New York, N. Y.)

UNITED STATES HEALTH SERVICE

Annual Reports of the Surgeon General of the Public Health Service of the United States for the fiscal years 1918, 1919, 1920. Three separate volumes, each of several hundred pages. Dealing with many phases of Federal public health work of importance to municipalities. (Apply to the Government Printing Office, Washington, D. C.)

HOUSING IN ONTARIO

"Report re Housing for 1921, Including Town Planning of the Town of Kapuskasing." Printed by order of the Legislative Assembly of Ontario. 1922. 27 pp. Maps. Showing the work done in 1921 under the Ontario Housing Act, 1919, and in 1920 under the Municipal Housing Act of that year. Published by the Bureau of Municipal Affairs. (Apply to J. A. Ellis, Director of the Bureau, Toronto, Ont.)

FIGHTING INFLUENZA

Framingham Epidemic and Post-Epidemic Observations of Influenza. This is Framingham Monograph No. 9 in the Medical Series of the Framingham Community Health and Tuberculosis Demonstration of the National Tuberculosis Association. Issued July, 1922. 24 pp. "For the first time, so far as is known, a normal urban population group, following an influenza epidemic, has been studied, not only statistically by mortality and by morbidity reporting, by nursing visits, correspondence, etc., but also through actual thorough physical examinations, by specialists in thoracic disease." (Apply to Donald B. Armstrong, M. D., Executive Officer, Community Health Station, Framingham, Mass.)

GALVESTON FIVE-CENT FARE DECISION

Under this title, an analysis of the most recent decision in the Galveston Street Railway fare case. The facts of the case are given in the opinion of the court delivered by Mr. Justice Brandeis. An address before the Tenth Annual Convention of the League of Texas Municipalities, Waxahachie, May 17, 1922, by Frank S. Anderson, City Attorney of Galveston, Texas. A reprint from **Texas Municipalities,** July, 1922. 8 pp. (Apply to **Texas Municipalities,** Division of Government Research, Bureau of Extension, University of Texas, Austin, Texas.)

Around the world on native-lake asphalt

Route de Vilaconblay, Versailles, France, paved with Trinidad Lake Asphalt.

London
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Versailles, France
Frankfurt, Germany
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Rio de Janeiro, Brazil
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Trinidad in France

Pounded by heavy, war-time traffic—day after day, month after month—without damage! That's the record of Trinidad Lake Asphalt paving on the Route de Vilaconblay, Versailles, France.

Thousands of the splendid streets and highways—in all parts of the world—prove the durability of Trinidad and Bermudez native-lake asphalt pavements under the most severe conditions of climate and traffic.

Sun-baked, wind-swept and storm-beaten for ages in the tropics, these nature-made asphalts have been seasoned and toughened for long-lasting, economical service on modern streets and highways.

Quality streets and quality roads demand quality pavings. Trinidad and Bermudez pavements are attractive, resilient, noiseless and last for years with little or no cost for repairs.

Write at once for booklets describing these remarkable, age-old materials.

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The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

TRINIDAD AND BERMUDEZ
THE NATIVE LAKE ASPHALTS

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Graphic Water-Stage Register for Reservoirs

The value of graphic water-stage registers in keeping track of the elevation of reservoirs and of the flow in sewers is well-known to municipal engineers. W. & L. E. Gurley, Troy, N. Y., have developed a graphic water-stage register with a normal range of 1 to 10 feet and a time scale of 7 days, which has been in satisfactory use for many years in various municipal and hydraulic developments. The machine is of simple construction with very few parts and is adapted for a wide range of conditions. It is constructed so that it is almost impossible for lost motion to develop from continuous service; thus the machine can be operated with minimum care and expense.

The vertical scales may be from 0 to 1 foot to 0 to 20 feet, and the time scale either 1, 4 or 7 days. As the record of the stage is made around the cylinder, there is no limit to the number of revolutions possible, and hence to the range of stage. Therefore, it is advisable to use as low a range as possible and thus obtain a more accurate reading of the water-stage. If occasionally the water-stage is above the range of the register, no trouble will be experienced in reading the water-level. The light weight of these registers makes them easily portable and hence adapts them to those special hydraulic investigations during which it is necessary to make frequent changes in the position of the register. The hydrograph or curve recording the stage and time is continuous over 7 days and presents graphically all the fluctuations of stage and their time relations. These are shown at a glance by the curve, which is a picture record of conditions. This type of record has many advantages and is especially useful in certain situations. The graphic record is easily interpreted and where desired may be quickly reduced to statistical form. The record sheets are cut to fit the cylinder closely, and the pencil carriage is adjustable, insuring an accurate setting of the gage. The gage cylinder is securely locked in place when setting the gage.

The slot which extends through the entire length of the recording cylinder, and the two guards which prevent the perforated phosphor bronze band from accidentally slipping over the spines on the sprocket wheel when the record is being taken off, prevent the observer from any change or mistake when handling the register after it has been properly installed by the engineer in charge.

AN AUTOMATIC REGISTER THAT TELLS THE WHOLE STORY ACCURATELY

A New Pump for Small Town Fire Departments

A new portable pumping outfit weighing less than 100 pounds complete and with a capacity of 2,400 gallons per hour at 70 pounds pressure and 900 gallons per hour at 155 pounds pressure, has recently been brought out by the Evinrude Motor Company, Milwaukee, Wis. The pump is a small Viking special internal gear pump, direct-connected to an Evinrude 4-5 horse-power two-cylinder, two-cycle motor. Pump and motor are mounted on a strong aluminum base and measure 31 inches over all, 11½ inches wide, 17 inches high. The pump has a 2-inch suction and a 1½-inch discharge.

This pump was brought out in response to a demand for a light, high-pressure outfit that could easily be carried by two men, for use in fighting forest fires. It has demonstrated its ability in that field and has been adopted by small town fire departments as standard equipment which can readily be carried in any automobile. At a head of 277 feet or through 1 1-3 miles of 1 1-2-inch pipe, it will deliver 1,500 gallons per hour. At a pressure of 120 pounds, it will throw a stream 100 feet through a ⅜-inch nozzle.

General Motors Trucks

Char-a-banc body mounted on G M C Chassis

GMC Bus Fits Municipal Needs

A number of municipalities are considering the operation of bus lines with GMC equipment. The success obtained by the rural school districts with GMC buses and by private operators has demonstrated the economy of this equipment.

GMC built a special bus chassis, powered with the famous GMC engine, and adapted particularly to bus work. In addition the one ton GMC chassis is used for smaller bus work, particularly in hauling school children.

GMC Trucks Wear Longer

Every part that goes into the building of GMC trucks is oversize. GMC engineers have increased the strength of the various units over that common to other trucks of like capacity to insure against the extra severe strains that a motor truck has put upon it at different times.

By doing this long life has been built into these trucks. Moreover the design of GMC trucks has been refined to the point where there is not a single wearing part in the entire chassis which cannot be replaced. Every point of actual wear is fitted with a bushing or bearing which can be quickly and easily replaced for a reasonable cost.

Additional safeguards to continuous operation and to added years of usefulness such as radius rods, magneto ignition, conduit wiring, over-sized brake drums and interchangeable brake rods are further guarantees of a longer life for GMC trucks than is common to the average motor truck. In fact, there is no way in which the life of a GMC truck can be estimated. With a reasonable amount of care it should last indefinitely.

Quality Comes First

Such painstaking care in the design and manufacture of GMC trucks has resulted from a determination that quality should be the first consideration in their building. Not only are the finest materials used in their construction but these materials are fabricated to extremely fine limits of accuracy. Special machinery, designed for the manufacture of GMC truck parts exclusively is employed in many of the operations to insure the high degree of perfection that GMC builders maintain in every truck produced by them.

Continual inspection in every process of the manufacture of these trucks starting with the rough stock and continuing after each individual operation of manufacture and assembly is a perpetual check upon the workmanship to insure that it meets the GMC standard of excellence.

And these quality trucks sell at prices that are remarkable in consideration of the value which they offer.

GMC chassis list at the factory as follows: one ton, $1295; two ton, $2375; three and one-half ton, $3600; five ton, $3950; tax to be added.

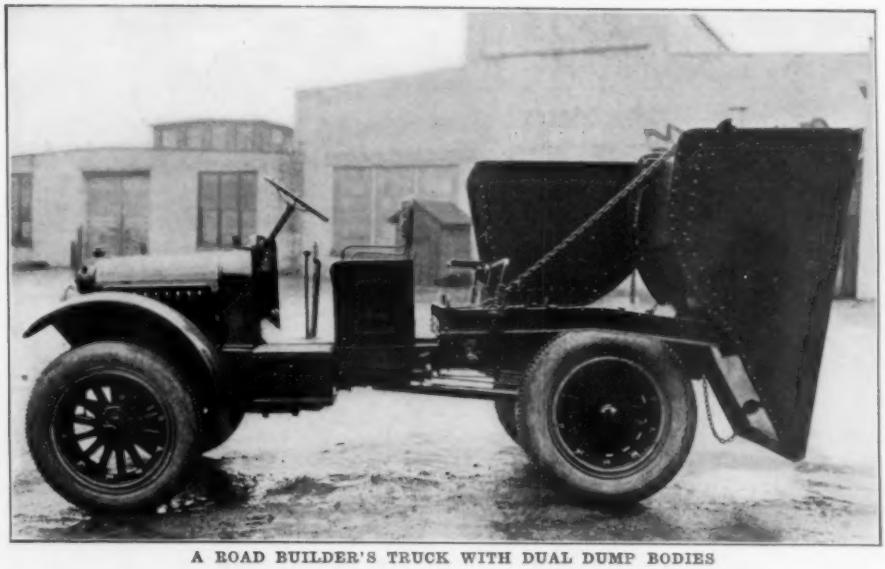
GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

Pontiac, Michigan

DEALERS AND SERVICE IN MOST COMMUNITIES

When writing to Advertisers please mention THE AMERICAN CITY.



A ROAD BUILDER'S TRUCK WITH DUAL DUMP BODIES

Specialized Motor Haulage Equipment for Highway Construction

To meet the demand for small, efficient transportation equipment for highway work, the engineering staff of the Republic Truck Sales Corporation, Alma, Mich., has designed a road builder truck, specifically adapted to the requirements of contractors and municipal and county highway departments for highway concrete construction. In order to provide the necessary maneuvering ability in operating over subgrades, the chassis has a wheel-base of only 110 inches, with a turning radius of 15½ feet, and is equipped with pneumatic tires. The body is mounted comparatively low and is well-balanced over the rear axle with approximately 40 per cent of the total load carried on the front wheels.

The Republic Road Builder is also used for building hard-surfaced gravel roads as well as for concrete construction. Contractors and municipal highway officials have also found them useful for hauling gravel from the pit and stone from the quarries to the crusher. Fleets of these trucks are in operation in Illinois, Michigan, and North Carolina. The Davis-Wilcox Construction Company, Charlotte, N. C., operates a fleet of five, and the Knoll Construction Company, also of Charlotte, is using them in connection with the dry mix system over an average haul of seven miles. The Powell Paving Company, Blithe Brothers, and the Mulligan Construction Company, all located in North Carolina, are successfully operating fleets of these trucks on concrete construction.

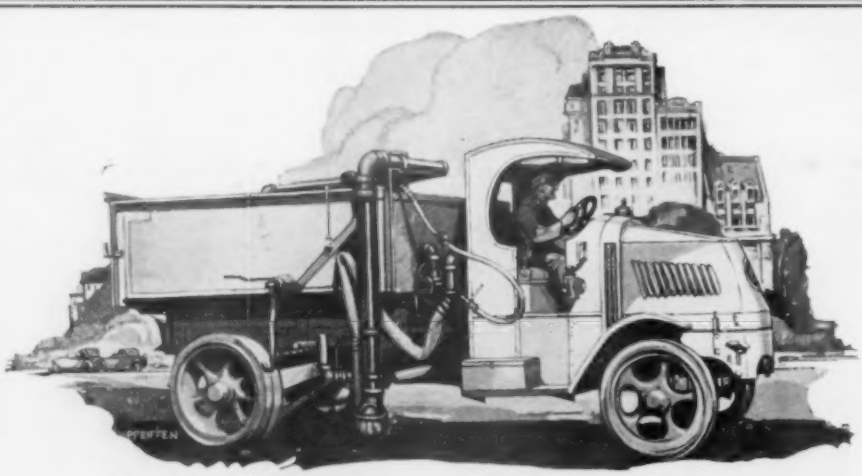
Seattle Orders New Equipment for Gorge Power Plant

The city of Seattle, Washington, has recently placed with the Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa., orders for equipment for its new Gorge hydro-electric plant. This plant is located on the Skagit River about 100 miles from the city and will tie in with the other municipal plants now in operation. Its initial capacity will be 60,000 kilovolt amperes, but an ultimate capacity of 180,000 kilovolt amperes is planned. The ultimate capacity of the entire municipal system will be 500,000 kilovolt amperes.

The new contract is for switching equipment. The plant is to have a control desk containing three generator sections, one of which is for future equipment and one section for the transmission line. There will also be a relay and metering switchboard with the same arrangement as the control board. An auxiliary switchboard, composed of 14 panels, will be provided for the control of the station circuits, exciters, etc.

Six type "SK" 75-kilowatt service transformers, three of which are 6,600 to 440/220 volts and three 6,600 to 220/110 volts are included in the order. Three of them will be used for starting a spare exciter motor generator set and three for station, light and power transformers. Three 833 kilovolt ampere oil immersed, water-cooled transformers, each 11,000 volts high tension and 6,600 volts low tension, will provide station power and local feeder service.

On the high tension bus and transmission lines, which will operate at 165,000 volts with solidly grounded neutral, three-pole, 155,000-volts, 400 ampere, electrically-operated oil cir-



Special Equipment for Catch-Basin Cleaning

THE Otterson Auto-Eductor is effecting marked savings of time and money in many municipalities today. This apparatus is mounted on a 5-ton Mack chassis and consists of a large steel tank, powerful centrifugal pump, hose, connections, etc. It is operated entirely by the truck engine, and constitutes the most efficient outfit made for cleaning catch-basins or corner inlets.

The efficiency of the whole apparatus—truck and eductor—makes possible an immediate saving of from 25% to 75% in the cost of doing such work by obsolete methods. The distinct combination of advantages in the apparatus is its flexibility, its speed of operation, coupled with the low operating cost and long life of the Mack chassis. Specifications will be sent upon request.

Our latest "Municipal Equipment Bulletin" contains detailed descriptions of the most comprehensive line of municipal transport apparatus available today.

You should have a copy. Simply drop us a post-card requesting it.

INTERNATIONAL MOTOR COMPANY, 25 Broadway, New York

Branches owned by this Company operate under the titles of: "MACK MOTOR TRUCK COMPANY" and "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION."

Capacities: 1½ to 7½ tons — Mack TRUCKS — Tractors to 75 tons

"PERFORMANCE COUNTS"

cuit breakers will be used. These have an interrupting capacity of 4,000 arc amperes at 165,000 volts. Three-pole, 15,000 volt, 2,000 ampere, electrically operated oil circuit breakers with an interrupting capacity of 30,500 arc amperes at 12,000 volts will be used for control of the generators and the low tension side of the step-up transformers and the high tension side of the power and local feeler transformers.

All high tension switching equipment will be mounted indoors and the connections to the transmission line will be made by means of 400 ampere, 165,000 volt, condenser type roof bushings.

Sanding Slippery Streets and Sidewalks

The time is rapidly approaching when street superintendents and other municipal officials will think seriously of sanding streets, particularly on grades, to prevent the slipping of horses and trucks. This "safety first" expedient is repaid many times in freedom from accident.

Warren Brothers Company, 9 Cambridge Street, Boston, Mass., manufactures a stone- and sand-spreading cart which evenly spreads a thin film of sand or grit on a pavement, throwing the material to a considerable distance in all directions. This cart, which is substantially constructed, can be handled by one man. It is equipped with a galvanized sheet steel body, large-diameter wheels and small pilot wheel for balancing it when standing.

The sand or grit falls through an opening in the bottom of the carrying hopper upon a revolving cone, which throws it uniformly over the surface of the street. The distributing cone is revolved by means of a chain and sprockets, the sprocket on the counter-shaft being equipped with a friction clutch, which permits throwing the revolving mechanism out of gear when carrying a loaded cart from the source of supply to the area to be sanded, and also when moving the empty carts about. This considerably minimizes the labor of hauling the cart. The flow of sand from the carrying pan to the revolving cone is controlled by means of a lever extending to the left hand of the operator. The cart distributes the sand much more evenly and economically than can be done by straight hand labor.

A SANDING CART FOR CITY USE

Demonstration of Road Maintenance Outfits

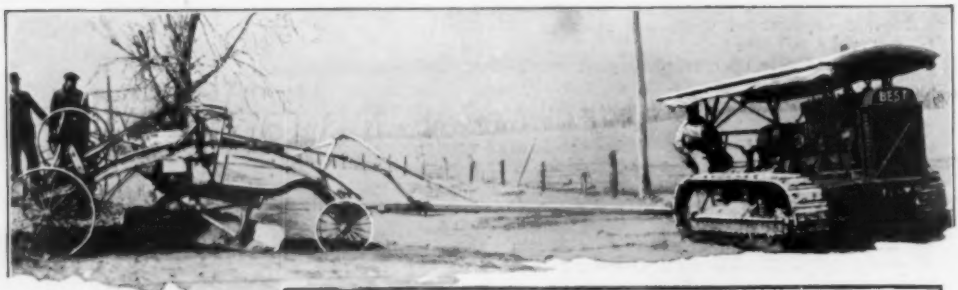
Municipal officials will be interested to know that the Avery Company, of Peoria, Ill., has over one hundred demonstrating crews out with Avery one-man "Road-Razers," demonstrating the machine in every Avery branch house territory in the United States. Street superintendents and other municipal officials wishing a demonstration of this machine in their own cities can secure it without charge or obligation by writing to Henry J. Barbour, the Avery Company, Peoria, Ill.

The new model Avery one-man power-lift Road-Razer has a special power-lift device connected with the motor and transmission, which enables the operator to raise or lower the blades instantly by merely tripping a lever. This is a special feature of this machine alone. The blades are also arranged so that the angularity is changeable; for instance, they can be changed from a position required for maintenance work to a position of greater angle for doing such work as moving dirt after a grader or for removing snow.

All the gears on this machine are entirely enclosed and run in oil. The machine is also equipped throughout with roller and ball bearings. It has an improved ball bearing turntable on the front wheel, with two sets of solid steel balls running in oil. It has a removable flange on the front wheel and also a friction brake. The machine is provided with a platform and a comfortable cushion seat and back rest for the operator. It has a fuel tank holding 20 gallons, the tank and the hood being separate. It is equipped with an improved type of muffler, handy tool box, draw-bar attachment for pulling wagons, oil tanks, cement mixers, etc.

Street Sanitation Convention Date

The International Association of Street Sanitation Officials has changed the date of its October conference to Monday, October 9, and Tuesday, October 10, in the east room, mezzanine floor, Hotel LaSalle, Chicago, Ill.



Write for full data, prices and the names of our nearest dealers. Let us give you the details of how economically Best Tractors build and maintain streets and roads.

DEPT. OF HIGHWAYS
OKLAHOMA COUNTY,
OKLA.

COURT HOUSE
OKLA. CITY

PHONE
MAPLE 1410

March 29, 1922.

The attached is a photograph of the BEST "60" Tractor, No. 592-A, purchased from the Cardwell-Lyman Sales Company of Oklahoma City, by Oklahoma County, on February 2, 1921.

Our records show that this tractor has been run approximately 2700 miles. It has graded 30 miles of road that had never been graded before, and 194 miles of road that had been graded; total 226 miles of road graded.

Also it has pulled stumps, dragged roads with planer, and moved approximately 8,000 cu. yds. of dirt an average distance of 300 feet.

The tractor is in perfect condition and shows very little wear.

Total repairs used on tractor to date	$ 68.25
Total gasolene and oil (including gas for operator's car)	1478.68
Salaries for tractor and grader operators	3316.00
TOTAL	$4864.93
Total number of days worked	308
Total expense per day	$15.86
Total days grading, 282 @ $15.86	$4472.52
226 miles road graded in 282 days	
total cost per mile,	$19.79

This tractor has been down for repairs approximately ten hours in the total fourteen months.

Matt Peters
Tractor Operator
J W A Potter
Grader Operator
Geo. A. Gastman
Auditor of Treasurer's Office
Ralph B. James
County Engineer

SUBSCRIBED AND SWORN TO Before me, a Notary Public in and for Oklahoma County, this 29 day of March, 1922.

Gertrude E. Muller

Comm expires 6/2/23

C. L. BEST TRACTOR CO.

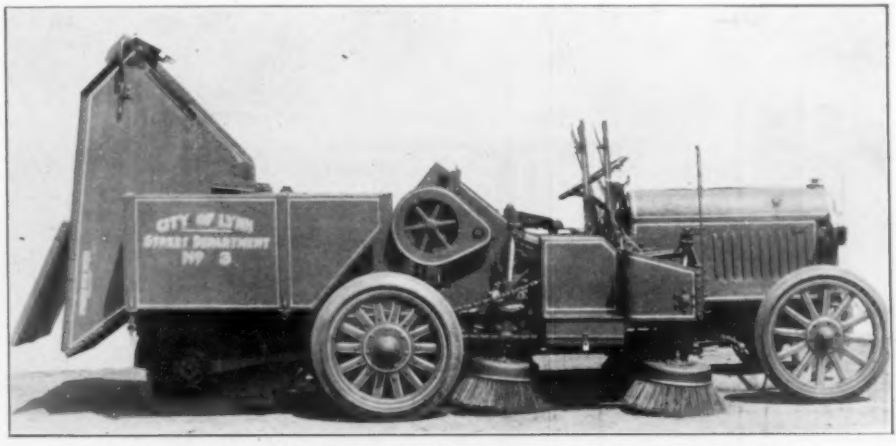
Factory and General Office
SAN LEANDRO, CALIFORNIA

Distributing Warehouses
SPOKANE, WASH., ST. LOUIS, MO.

BEST TRACTORS

New Pick-up Street Sweeper

The new type of pick-up sweeper with a motor truck mounting has recently been placed on the market by the Springfield Motor Sweeper Company. This sweeper has five disc brushes that sweep the material into a windrow, which enables a 30-foot-wide pick-up broom to deliver the dirt to the elevator belt. Steel brushes are used, which are claimed to be much more durable than the usual type of wood brushes. The manufacturers, the Springfield Motor Sweeper Company, Springfield, Ohio, claim that the narrow broom far outlasts the wider type, and gives more satisfactory service. The manufacturers claim to have spared no expense in the matter of material or workmanship in producing this machine, which they feel will be a successful and satisfactory sweeper.



ROTARY SIDE BROOMS AND A NARROW PICK-UP BROOM ARE FEATURES OF THIS PICK-UP SWEEPER

Wickwire Spencer Steel Corporation Moves to New York

The Wickwire Spencer Steel Corporation, whose general administrative and sales offices have been located in Worcester, Mass., moved these offices to the Liggett Building, 42nd Street and Madison Avenue, New York City, on September 1. The New York office, formerly located in the Equitable Building, 120 Broadway, has been combined with the general offices in the Liggett Building. The Philadelphia warehouse, 237 North 6th Street, will not be affected by this change and will be maintained as formerly to serve the Philadelphia territory, but the Philadelphia sales office has been consolidated with the general offices in the Liggett Building, New York City. The Boston office has been closed, but in order that service to customers adjacent to the New England mills, located at Worcester, Spencer, Palmer and Clinton, may not be interrupted, a divisional sales office has been established at 69 Hammond Street, Worcester, Mass.

A New Model 3½-Ton Truck

The Atterbury Motor Car Company, Buffalo, N. Y., has recently brought out a new model 3½-4-ton truck, especially designed for handling large high-pressure water-mains. The truck, illustrated below, in use by the city of Buffalo, is equipped with a Mead-Morrison capstan just back of the cab. The sides of the body are reinforced with extra heavy stakes to take care of the heavy weight and rolling side-sway of the cylindrical pipe.

The new series of Atterbury trucks which includes this model is claimed to have many refinements in design and assembling which particularly recommend them for municipal use. The motor in each model is of the latest type Continental, with pressure feed lubrication, removable cylinder head, hot spot manifold for complete vaporization, and shaft-driven centrifugal governor. The multiple dry disc clutches insure smooth, positive action and long life, are operated without lubrication or attention, and are unaffected by climatic changes. In the heavier models the transmissions are mounted amidships and have four speeds ahead and one reverse, while in the 1½-ton model the transmission is built as a unit with the motor and has three speeds forward and one reverse. The brakes act directly on drums bolted to the wheels, thus relieving the driving mechanism of all braking strains. The axles, both front and rear, are Timken, with roller bearings throughout. The worm drive is standard on all models and is simple and long-lived. The flexible frame relieves the entire truck of a great percentage of the shocks and strains which ordinarily would be transmitted throughout the chassis to the vital working parts. Bolts are used all through the

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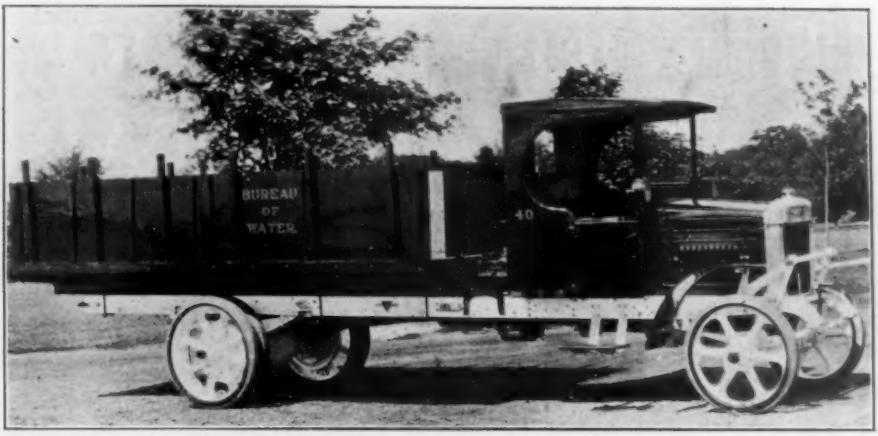

A 3½-TON TRUCK USED BY THE BUREAU OF WATER, BUFFALO, N. Y.

chassis in place of rivets. The electrical equipment consists of Delco generator, storage battery, two large truck type headlights, and tail lamp, provided without extra cost.

Tractors Help in River Control

Two Holt "Caterpillar" tractors are being used by the Wood Brothers Construction Company to snake trees from bottom-land timber sections to the bank of the Missouri River, where standard current retards are being built for river-bank protection. At Dakota City, Neb., where twenty of these retards are being constructed, a 5-ton 'Caterpillar" tractor drags the trees as they are chopped, through the heavy underbrush to an opening or to a convenient roadway. Here the trees are bunched, loaded on a special two-wheel Lufkin cart and hauled by a 10-ton tractor two or three miles to the river. As fast as the trees are delivered, two construction gangs of seven men each are kept busy with a steam hoisting engine pulling the trees into the river to make the current retards. The tractors work day and night, averaging more than twenty hours out of each day. The largest trees are hauled three to a load. No trimming whatever is allowed, as limbs, branches, leaves and trunk are dragged bodily.

The standard current retard system for bank protection was originated and developed by the Wood Brothers Construction Company, of Lincoln, Neb. This method of checking bank erosion has proved very effective and replaces the older revetments, solid dams, and brush barriers. As a result of the current retard con-

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¶ The non-oozing quality lies in the body structure which cannot be squeezed out like paste in a tube.
¶ The body compresses and re-expands.
¶ Note the depressions and elevations indicated by the arrows. This joint cannot rise out of the crevice.
¶ Note the solid crown and base indicated by the solid black.
¶ Note the fibrous matted cellular structure between the saturated side walls—a body so constructed will readily take up the expansion which the joint in the illustration below failed to do.
¶ These features are found only in Servicised Joints.

Type of Joint:
AA—Cellular Core Bitumen Jacket.
B —75% Bitumen 25% Compressible Cellular Fibre.
D —Herein described (Self Expanding)
C —Sidewalk Joints.

¶ THERE IS A SERVICISED PRODUCT FOR EVERY PAVING REQUIREMENT.

¶ The contents of the half inch expansion joint to the left has been squeezed out until only the sides remain.
¶ The movement of the slabs during expansion is thus proven to have been more than one quarter of an inch.
¶ The inadvisability and futility of using a solid joint is also proven.
¶ All joints, even though they contain fibrous matter, WHEN IMPREGNATED WITH BITUMEN are solid.

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struction, rivers control themselves and thus save thousands of acres of rich land in Iowa, Nebraska, and Missouri. In making these retards the trees are placed in the stream side by side with the branches down-stream, and are held in position by cables attached to patented Bicknell concrete piles, forming a permanent anchorage. These mats of trees extend out from the bank 150 feet or more and contain anywhere from 500 to 1,500 trees. Behind the mats the river deposits its silt and so forms sand-bars to deflect the current from the banks and prevent caving. As the trees sink, additional trees are placed above those already in the water. As this action goes on, the trees gradually sand themselves in, and with the submerged piles form an immovable mass. The retards are placed at the bend of the river at such angles and intervals as are most needed to drop the most silt and protect the most land.

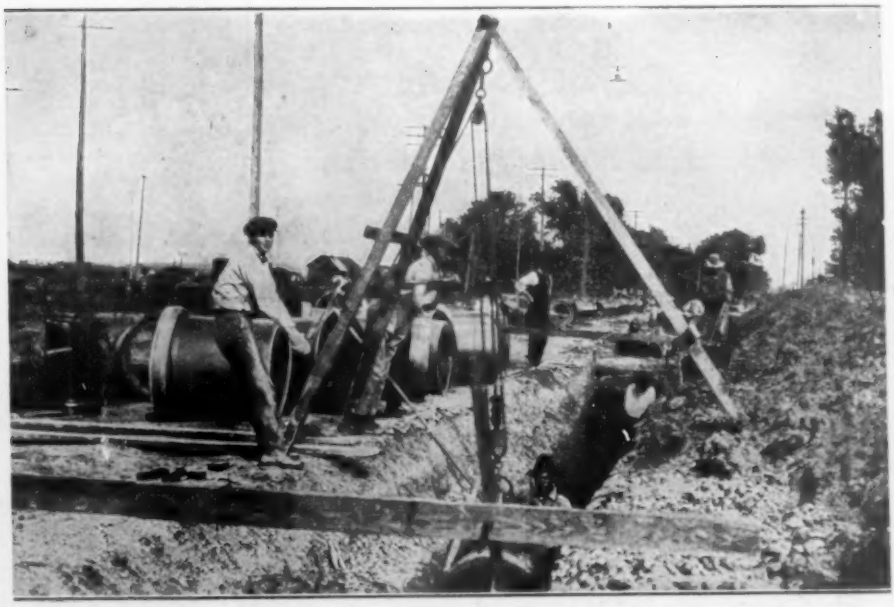
The Dakota City District is made up of farmers who have banded together to protect their land along the river. This land, which has a water-front of seven miles, is assessed to pay for the work. Over 20,000 trees are being used to complete the retards on this particular job.

Vitrified Clay Sewer Pipe for Storm Sewers

Many cities and towns put off the construction of storm sewers because they do not feel they can stand a large initial payment. The cost, of course, varies in different places because of local conditions. In some instances the sewers can be installed in shallow ditches, and in others they must be placed in deep trenches; sizes also may vary because of weather conditions.

It is almost universally recognized by large cities that storm sewers are inseparable from, and complementary to, all paving improvements. This applies to pavements in both business and residential sections. The question has frequently arisen—just what is a storm sewer worth? Storm sewers in connection with pavements are well worth what they cost, especially when placed in the business section of a municipality. The use of storm sewers eliminates cross-gutters, which are a continual nuisance to vehicular traffic and which in times of continuous rains form a barrier very inconvenient to pedestrians. In eliminating cross-gutters it is possible to have so-called level crossings which eliminate step-downs at the curb and provide a dry passageway for foot traffic at all times. Storm sewers eliminate flooded basements and do away with débris, which is less on paved streets after a storm.

The W. S. Dickey Clay Manufacturing Company, Kansas City, Mo., furnishes No. 2 grade vitrified pipe for many storm sewer jobs. This pipe has the same characteristic qualities as all vitrified salt-glazed clay products. The pressing, drying and burning process is identical. The No. 2 pipe is graded out of No. 1 because of slight defects, which exempt it from being used for the exacting duty of sanitary sewer pipe, but do not disqualify it from permanent and successful service as storm sewer pipe.



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